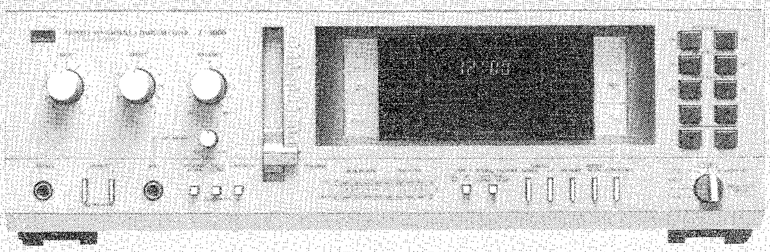
SERVICE MANUAL

QUARTZ SYNTHESIZER COMPU-RECEIVER

SANSUI Z-5000/3000



Sansui

SANSUI ELECTRIC CO., LTD.

● SPECIFICATIONS

● Z-5000

Audio section

Power output

Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.007 % total harmonic distortion.
70 watts per channel into 8 ohms

Load impedance	4 and 8 ohms
Total harmonic distortion	
from AUX	less than 0.007 % at or below rated min. RMS power output
Frequency response (at 1 watt)	
from AUX	10 to 100,000 Hz, +1.0 dB, −3.0 dB
RIAA curve deviation (PHONO, 20 Hz, 20 kHz)	+0.5 dB, −0.5 dB
Input sensitivity and impedance (at 1 kHz)	
PHONO	2.5 mV/47 kilohms
TAPE PLAY, AUX	150 mV/47 kilohms
MIC	0.5 mV/20 kilohms
Output level (at 1 kHz)	
TAPE REC	150 mV
Signal to noise ratio (short-circuit, A-network)	
PHONO	82 dB
TAPE PLAY, AUX	95 dB

FM section

Tuning range	88 to 107.9 MHz
Usable sensitivity	
Mono	10.8 dBf
Stereo	20 dBf
50 dB quieting sensitivity	
Mono	16.5 dBf
Stereo	37.0 dBf
Signal to noise ratio (at 65 dBf)	
Mono	76 dB
Stereo	70 dB
Distortion (at 65 dBf)	
Mono	less than 0.15 % at 1,000 Hz
Stereo	less than 0.2 % at 1,000 Hz
Alternate channel selectivity (at 400 kHz)	55 dB
Capture ratio	1.0 dB
Spurious response ratio	80 dB
IF response ratio	90 dB
Stereo separation	40 dB at 1,000 Hz
Frequency response	30 to 15,000 Hz +1.0 dB, −1.5 dB
Antenna input impedance	300 ohms balanced 75 ohms unbalanced

AM section

Tuning range	530 to 1,600 kHz
Usable sensitivity	50 dB/m
Selectivity	30 dB
Signal to noise ratio	45 dB
Distortion (at 30 % Modulation, 80 dB/m)	less than 0.5 %

Others

Power requirements	
Power voltage	120, 220, 240 V (50/60 Hz)
For U.S.A. and Canada	120 V (60 Hz)
Power consumption	
Rated consumption	260 watts 325 VA
Dimensions	430 mm (16-15/16") W 133 mm (5-1/4") H 360 mm (14-3/16") D
Weight	8.6 kg (19 lbs.) net 9.9 kg (21.8 lbs.) packed

● Z-3000

Audio section

Power output

Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.008 % total harmonic distortion.
55 watts per channel into 8 ohms

Load impedance	8 ohms
Total harmonic distortion	
from AUX	less than 0.008 % at or below rated min. RMS power output
Frequency response (at 1 watt)	
from AUX	10 to 100,000 Hz, +1.0 dB, −3.0 dB
RIAA curve deviation (PHONO, 20 Hz, 20 kHz)	+0.5 dB, −0.5 dB
Input sensitivity and impedance (at 1 kHz)	
PHONO	2.5 mV/47 kilohms
TAPE PLAY, AUX	150 mV/47 kilohms
Output level (at 1 kHz)	
TAPE REC	150 mV
Signal to noise ratio (short-circuit, A-network)	
PHONO	82 dB
TAPE PLAY, AUX	95 dB

to be continued ▶

FM section

Tuning range	88 to 107.9 MHz
Usable sensitivity	
Mono	10.8 dBf
Stereo	20 dBf
50 dB quieting sensitivity	
Mono	16.5 dBf
Stereo	37.0 dBf
Signal to noise ratio (at 65 dBf)	
Mono	76 dB
Stereo	70 dB
Distortion (at 65 dBf)	
Mono	less than 0.15 % at 1,000 Hz
Stereo	less than 0.2 % at 1,000 Hz
Alternate channel selectivity (at 400 kHz)	55 dB
Capture ratio	1.0 dB
Spurious response ratio	80 dB
IF response ratio	90 dB
Stereo separation	40 dB at 1,000 Hz
Frequency response	30 to 15,000 Hz +1.0 dB, −1.5 dB
Antenna input impedance	300 ohms balanced 75 ohms unbalanced

AM section

Tuning range	530 to 1,600 kHz
Usable sensitivity	50 dB/m
Selectivity	30 dB
Signal to noise ratio	45 dB
Distortion (at 30 % Modulation, 80 dB/m)	less than 0.5 %

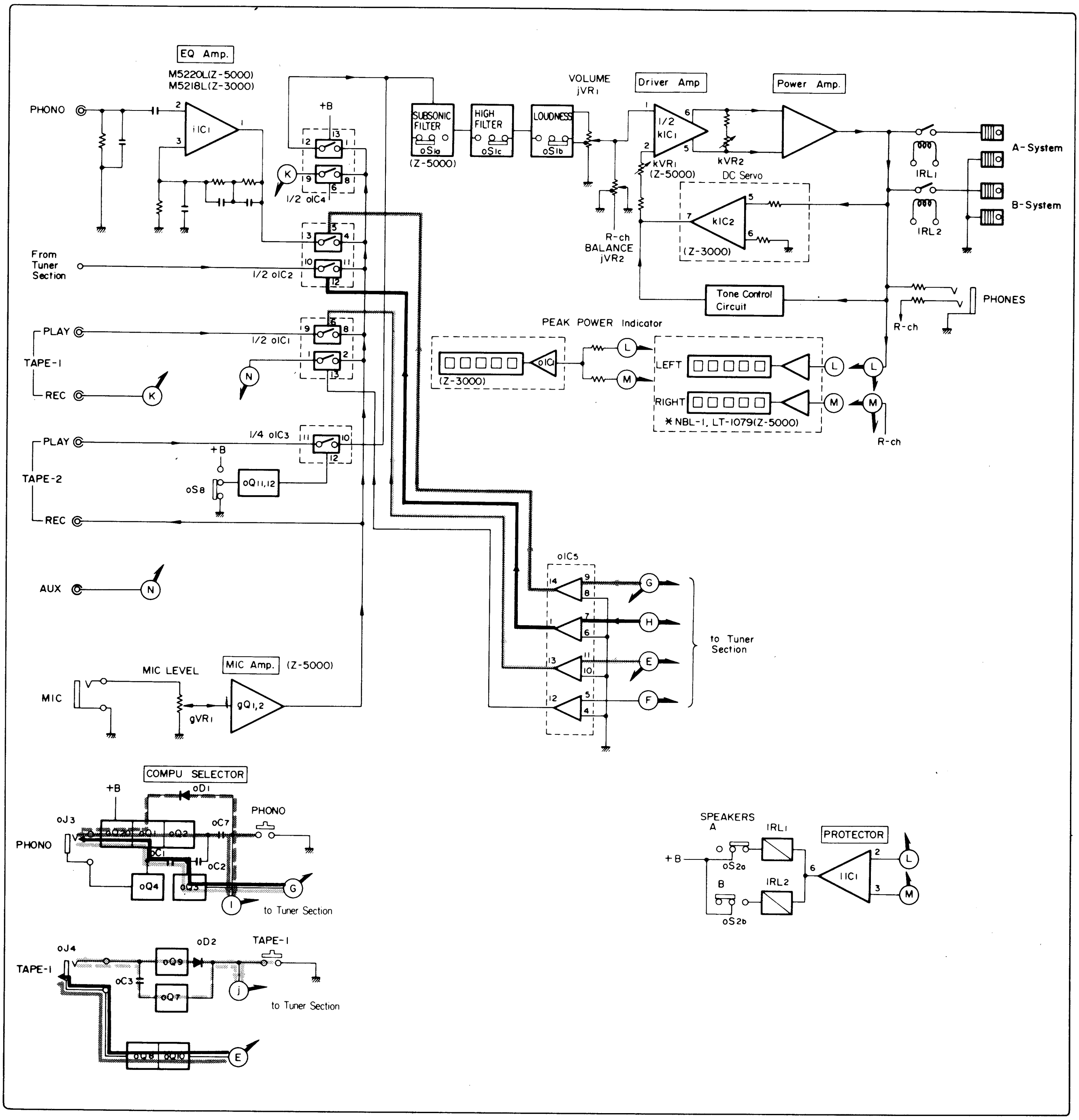
Others

Power requirements	
Power voltage	120, 220, 240 V (50/60 Hz)
For U.S.A. and Canada	120 V (60 Hz)
Power consumption	
Rated consumption	260 watts 325 VA
Dimensions	430 mm (16-15/16") W 133 mm (5-1/4") H 360 mm (14-3/16") D
Weight	7.7 kg (17 lbs.) net 9.0 kg (19.8 lbs.) packed

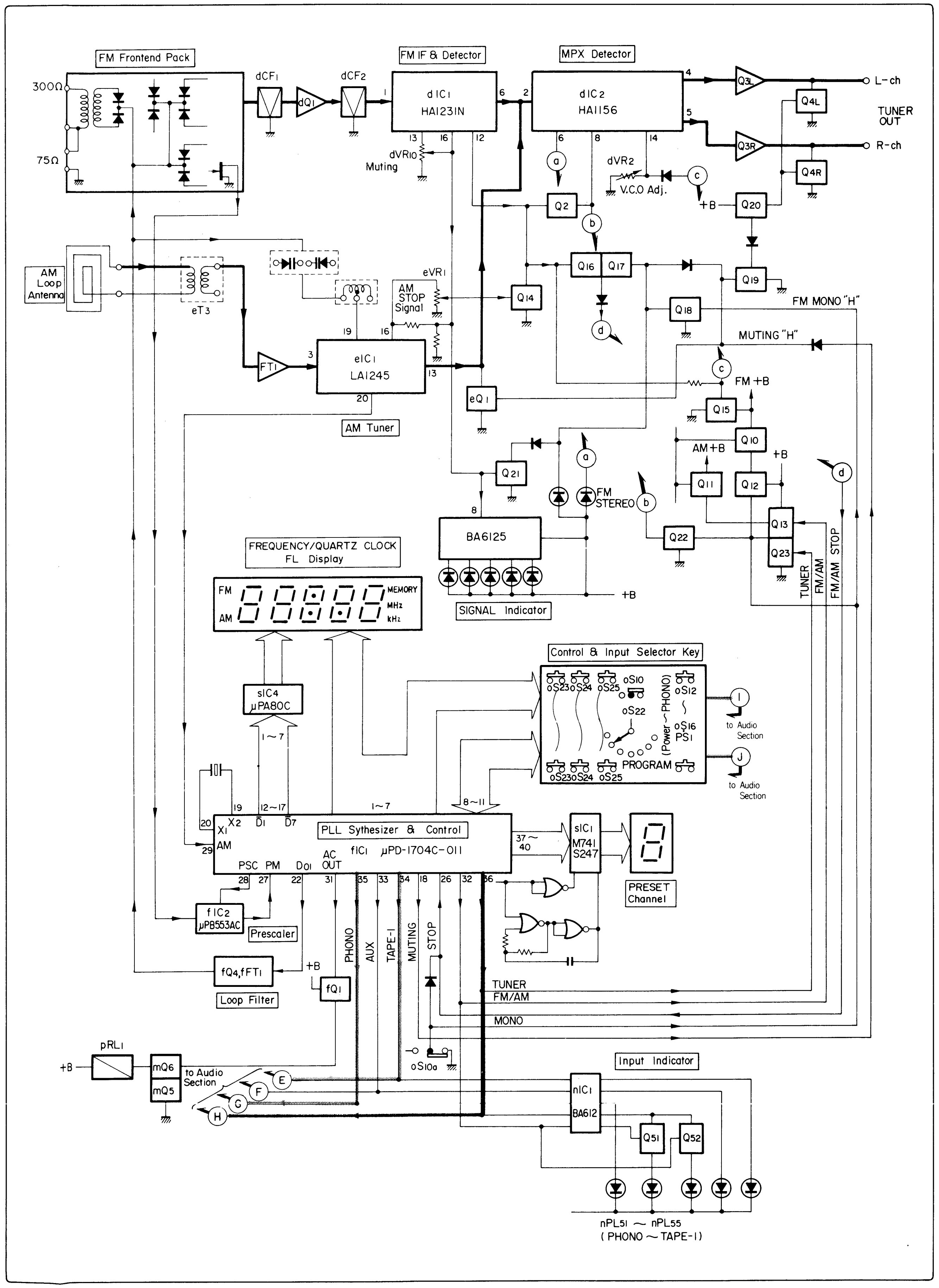
* Design and specifications subject to changes without notice for improvements.

1. BLOCK DIAGRAM

1-1. Audio Section


EQ Amp.
M5220L(Z-5000)
M5218L(Z-3000)
PHONO
iIC1
+B
1/2 oIC4
From Tuner Section
1/2 oIC2
TAPE-1
PLAY
REC
1/2 oIC1
TAPE-2
PLAY
REC
1/4 oIC3
oS8
oQ11,12
AUX
MIC
MIC LEVEL
gVR1
MIC Amp. (Z-5000)
gQ1,2
SUBSONIC FILTER
oS1a
(Z-5000)
HIGH FILTER
oS1c
LOUDNESS
oS1b
VOLUME
jVR1
R-ch
BALANCE
jVR2
Driver Amp
1/2 kIC1
kVR1 (Z-5000)
kVR2
DC Servo
kIC2
(Z-3000)
Power Amp.
IRL1
IRL2
A-System
B-System
Tone Control Circuit
PHONES
R-ch
PEAK POWER Indicator
oIC1
(Z-3000)
LEFT
RIGHT
*NBL-1, LT-1079(Z-5000)
R-ch
oIC5
to Tuner Section
COMPU SELECTOR
oJ3
oD1
oQ1
oQ2
oC1
oC2
oC7
oQ3
oQ4
PHONO
to Tuner Section
oJ4
TAPE-1
oD2
oQ9
oQ7
oC3
oQ8
oQ10
to Tuner Section
SPEAKERS
A
B
oS2a
oS2b
IRL1
IRL2
PROTECTOR
lIC1
+B
K
N
L
M
G
H
E
F
I
J

1-2. Tuner & Control Section


FM Frontend Pack
300Ω
75Ω
dCF1
dQ1
dCF2
FM IF & Detector
dIC1
HA1231N
dVR10
Muting
MPX Detector
dIC2
HA1156
dVR2
V.C.O Adj.
Q3L
Q3R
Q4L
Q4R
L-ch
R-ch
TUNER OUT
Q2
Q20
Q14
Q16
Q17
Q18
Q19
FM MONO "H"
MUTING "H"
AM Loop Antenna
eT3
eVR1
AM STOP Signal
FT1
eIC1
LA1245
AM Tuner
eQ1
FM +B
Q15
Q10
AM+B
+B
Q11
Q12
Q13
Q23
Q21
Q22
BA6125
FM STEREO
SIGNAL Indicator
TUNER
FM/AM
STOP
FREQUENCY/QUARTZ CLOCK FL Display
FM
AM
MEMORY
MHz
kHz
sIC4
μPA80C
Control & Input Selector Key
oS10
oS12
oS22
oS16
PS1
oS23
oS24
oS25
(Power ~ PHONO)
PROGRAM
to Audio Section
PLL Sythesizer & Control
fIC1 μPD-1704C-011
X1
X2
D1
D7
AM
PSC
PM
DO1
AC OUT
sIC1
M741
S247
PRESET Channel
fIC2
μPB553AC
Prescaler
fQ4, fFT1
Loop Filter
fQ1
PHONO
AUX
TAPE-1
MUTING
STOP
TUNER
FM/AM
MONO
oS10a
Input Indicator
nIC1
BA612
Q51
Q52
pRL1
mQ6
mQ5
nPL51 ~ nPL55
(PHONO ~ TAPE-1)

2. OPERATION OF COMPU SELECTOR

* This receiver has COMPU SELECTOR function which works with a turntable (P-D30, P-L40 or P-L50), a tape deck (D-77F, D-77R or D-99D).

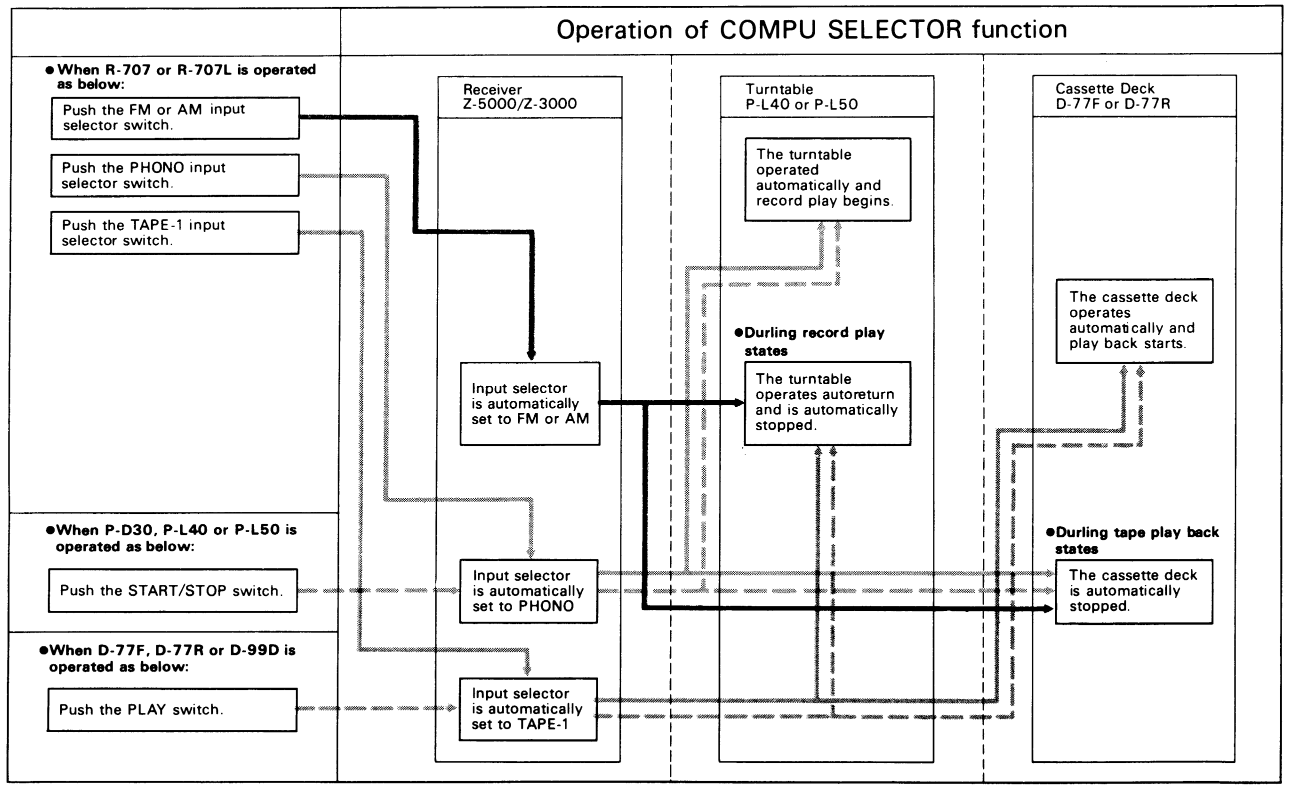
A. Operation when one of the input selector switches of the receiver is pushed

1) ● When the PHONO switch is pushed, input selector is automatically set to PHONO, the platter of the turntable (P-L40 or P-L50) starts rotating and the tonearm automatically moves to play record.
   ● When the FM, the AM or TAPE-1 switch is pushed during record play, the tonearm returns to the arm rest and the platter stops, rotating automatically.

2) ● When the TAPE-1 switch is pushed, input selector is automatically set to TAPE-1, the cassette deck (D-77F or D-77R) starts automatically to playback a tape.
   ● When the PHONO, the FM or the AM switch is pushed during tape playback, cassette deck stops automatically.

B. Operation when one of the function switches of combined unit is controlled

1) When the START/STOP switch of the turntable (P-D30, P-L40 or P-L50) is pushed, the input selector of the receiver is automatically set to the PHONO mode.
2) When the PLAY switch of the cassette deck is pushed, the input selector of the receiver is automatically set to the TAPE-1 mode.


Operation of COMPU SELECTOR function
● When R-707 or R-707L is operated as below:
Push the FM or AM input selector switch.
Push the PHONO input selector switch.
Push the TAPE-1 input selector switch.
●When P-D30, P-L40 or P-L50 is operated as below:
Push the START/STOP switch.
●When D-77F, D-77R or D-99D is operated as below:
Push the PLAY switch.
Receiver Z-5000/Z-3000
Input selector is automatically set to FM or AM
Input selector is automatically set to PHONO
Input selector is automatically set to TAPE-1
Turntable P-L40 or P-L50
The turntable operated automatically and record play begins.
●Durling record play states
The turntable operates autoreturn and is automatically stopped.
Cassette Deck D-77F or D-77R
The cassette deck operates automatically and play back starts.
●Durling tape play back states
The cassette deck is automatically stopped.

3. DESCRIPTION OF μPD1704C-011/PLL SYNTHESIZER & THE CONTROL IC

3-1. Function Outline

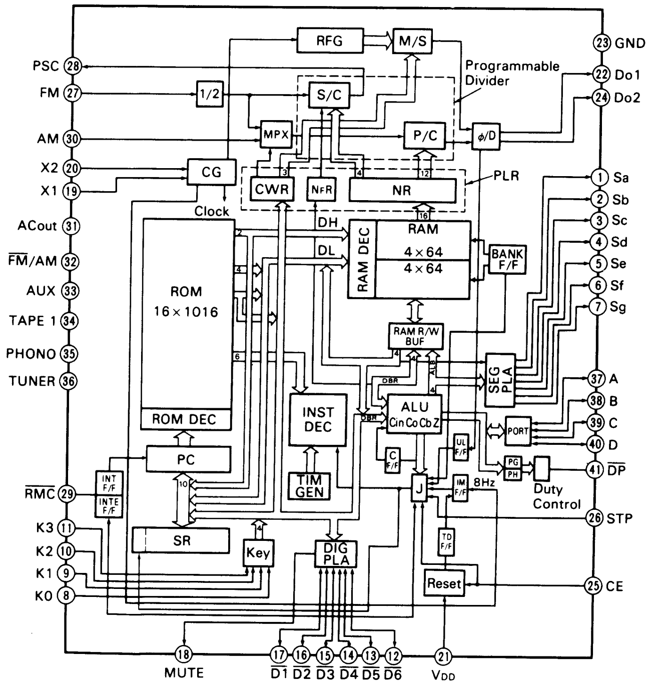
A. Functions of automatic station selection

1) Automatic tuning
2) Manual tuning
3) Preset scanning: Scanning operation is repeated from 1st channel to 8th channel with holding each channel for about five seconds.
4) Preset memory access: Accessible to eight stations for AM/FM each, independently, by depressing eight buttons.

B. Functions of programmable timers

1) PROGRAMS 1 and 2: Once ON/OFF times are preset, the designated source is turned on and the entire system is turned off repeatedly at the preset times every day.
2) PROGRAM 3: Once ON/OFF times are preset, the designated source is turned on and the entire system is turned off only once at the preset times.

3-2. Description of terminal function of μPD1704C-011



- **Terminal Function of μPD1704C-011**

Terminal Nos.	Terminal Symbols	Terminal Name	Function
1~7	Sa~Sg	Segment Output	Terminals for outputting indicator digit segment signals and a key return signal source. High level when active.
8~11	K_0~K_3	Key Return Signal	Terminals for inputting a key return signal from externally connected key matrix. The key return signal source is an ANDed signal of segment terminals Sa to Sg and tuner and phono terminals.
12~17	D_1~D_6	Digit Outputs	Terminals for outputting indicator digit signals. Low level when active.
18	MUTE	Mute	Terminal for outputting a muting signal to eliminate shock noise generated when PLL is unlocked. High level when active. This muting signal is kept outputted for 55 ms before and after PLL data (contents in the programmable counter) change. The muting signal is outputted in the following modes: * In AM/FM and selector switching * In MANUAL UP/DOWN * In AUTO UP/DOWN * In preset memory access (including preset scanning) * In switching from CLOCK set to $\boxed{\text{OFF}}$ mode
19, 20	X_1, X_2	X'tal	Terminals for connecting a 4.5 MHz quartz oscillator.
21	VDD	VDD	Terminal for a power supply for a device.
22 24	DO_1 DO_2	Error Out	Terminals for outputting signals from a phase detector which configures PLL. High level when the divided oscillator frequency is higher than the reference frequency. Low level when the divided one is lower than the reference one.
23	GND	Ground	Terminal connected to ground.
25	CE	Chip Enable	Terminal for inputting a device is used for the ordinary operations. Low level when no device is used. (1) When NONCLOCK is preset by an initializing diode matrix: CE = High . Ordinary operations CE = Low . Indicator is off. PLL is inoperative. Internal clock generator is inoperative. (2) When NONCLOCK is not preset by an initializing diode matrix: CE = High . Ordinary operations CE = Low . Indicator is off. PLL is inoperative.
26	SD	Station Detector	Terminal for inputting a signal to detect whether or not a station is received in automatic tuning (AUTO UP/DOWN). Automatic tuning stops when at high-level. However, it is necessary to input a High level signal within 50 ms after PLL has been locked.
27	FM	FM Local Oscillator Signal Inputs	Terminal for input a signal from FM programmable counter. The inputted signal is obtained by dividing an output signal from FM local oscillator (VCO) into 1/16 or 1/17 through prescaler μPB553AC.
28	PSC	Prescaler Control	Terminal for outputting a signal to change the division ratio of prescaler in FM. This terminal is connected to PSC terminal of prescaler μPB553AC. Selectable division ratios are 1/16 and 1/17 in μPB553AC.
29	$\overline{\text{RMC}}$	Remote Control Inputs	Terminal for inputting a remote control signal. Not now in use.
30	AM	AM Local Oscillator Signal Inputs	Terminal for inputting a signal from AM programmable counter. The inputted signal is one outputted from AM local oscillator (VCO).
31	AC OUT	AC Outlet Control	Terminal for AC outlet. The AC outlet is used for energizing a relay to break the main power supply for the set. High level when any of selection terminals (TUNER, PHONO, TAPE-1, and AUX) is on. Low level when STD-BY key is depressed.
32	$\overline{\text{FM}}$/AM	FM/AM Power Supply Control	Terminal for switching the power supply for FM section to that for AM section or vice versa in tuner. Low level in FM. High level in AM.
33 34 35 36	AUX TAPE-1 PHONO TUNER	AUX TAPE-1 PHONO TUNER	Terminals for selecting TUNER, PHONO, TAPE-1 and AUX. TUNER terminal is at a High level when FM/AM key or preset key is depressed; PHONO, TAPE-1, AUX terminals are at a High level when PHONO key, TAPE-1 key or AUX key is depressed respectively. Further, all terminals change to a Low level when STD-BY key is depressed.
37~40	A~D	Preset Station Indicator Outputs	Terminals for outputting preset station indicator BCD signals. The output BCD signals corresponding to the preset stations are listed below:
41	$\overline{\text{DP}}$	DECIMAL POINT	Terminal for outputting a decimal point indication signal in FM frequency indication. Low level when active.
42	$\overline{\text{COLON}}$	COLON	Terminal for outputting a COLON indication signal in CLOCK indication. Low level when active.

PRESET STATION	D	C	B	A
No channel designation	0	0	0	0
P1	0	0	0	1
P2	0	0	1	0
P3	0	0	1	1
P4	0	1	0	0
P5	0	1	0	1
P6	0	1	1	0
P7	0	1	1	1
P8	1	0	0	0

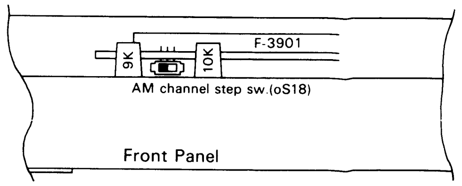
- **Since the description key matrix and the description of programmable timer operations employed in Z-5000 & 3000 are similar to those of Z-9000 & 7000, the explanation of those circuits are omitted from this manual, therefore please refer to the service manual of Z-9000/7000.**

4. ADJUSTMENTS

4-1. Reference Frequency Adjustment of Synthesizer Control Circuit

Note: 1. Input Selector . . . . AM
2. TUNING/FM MODE . . . . MANUAL/MONO
3. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS18, See Fig. 4-1) is set to 9 kHz and "**" is for the 10 kHz.
4. The unit without the AM 9/10 kHz channel step switch is "**" mark frequency.

Fig. 4-1



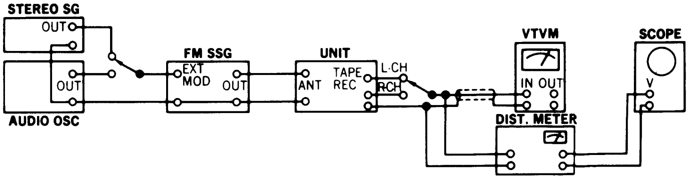
SUBJECT	SETTING	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
X'tal Frequency Adj.	Set frequency display to *999kHz <**1000kHz>	Between Point Ⓐ and Earth, F-3900, Frequency Counter ● See Parts Location F-3900 on page 9.	fTC1 (F-3901) (See Top View on page 11 & Parts Location F-3901 on page 10)	* 1449kHz ±10Hz <**1450kHz ±10Hz>	

4-2. FM Adjustments

(See Fig. 4-2 and Top View on Page 11)

Note: 1. Input Selector . . . . FM
2. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS18, See Fig. 4-1) is set to 9 kHz and "**" is for the 10 kHz.
3. The unit without the AM 9/10 kHz channel step switch is "**" mark frequency.

Fig. 4-2



(1) FM IF, RF

Note: TUNING/FM MODE . . . . MANUAL/MONO

STEP	SUBJECT	FEED SIGNAL			MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM		TO				
1.	FM IF Coil Adj.	*98MHz <**98.1MHz> ANT Input 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG		ANT terminal, 300Ω	Between Point Ⓑ (dVR10) and Earth, DC Volt Meter • See Parts Location F-3900 on page 9.	T1 (Front-end) (See Top View on page 11)	MAX. DC Volt	
2.	Discriminator Coil Adj.	1	*98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	Between Ⓒ and Ⓓ, (Across dR41), DC Volt Meter • See Parts Location F-3767 on page10.	dT2 (F-3767)	0 ±30mV	• Repeat procedures as stated in subject 1 & 2.
		2	Same as above	Same as above	REC OUT L-CH or R-CH, VTVM & SCOPE	dT3 (F-3767)	Min. THD	

(2) FM STEREO

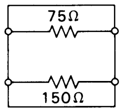
Note: TUNING/FM MODE . . . . AUTO/STEREO

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	PLL V.C.O. Adj.	*98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), FM SSG Pilot 19kHz (9% MOD.), R or L MODE 1kHz + Pilot (100% MOD.), STEREO SG.	ANT terminal 300Ω	STEREO Indicator	dVR2 (F-3767)	Light Indicator	Adjust the dVR2 within center of lighting level.
	PLL V.C.O. Adj; In case of using Frequency Counter	*98MHz <**98.1MHz> ANT Input 65dBf (59.8dB), FM SSG, No. MOD.	Same as above	Between Point Ⓔ (Pin 10 of fdIC2) and Earth, Frequency Counter • See Parts Location F-3767 on page 10.	dVR2 (F-3767)	19kHz ±50Hz	
2.	Muting Level Adj.	*98MHz <**98.1MHz> 20dBf (14.8dB), FM SSG, Pilot 19kHz (9% MOD.), L or R MODE 1kHz + Pilot (100% MOD.), STEREO SG.	Same as above	STEREO Indicator or REC OUT L-CH or R-CH VTVM & SCOPE	dVR10 (F-3900)	STEREO Indicator turns ON or Output Signal comes out.	

◆ Technical Hint for FM Adjustment

- There are two kind in indication of FM SG output attenuator
  1. Attenuator with marking of 75Ω open . . . open indication type.
  2. Attenuator with marking of 75Ω load or close . . . . . . load or close indication type.
- FM SG output level in this FM adjustment are described as open indication type.
- To feed FM signal, a dummy antenna circuit as Fig. 4-3 must be connected between FM SG output and ANT terminal (300Ω) of the unit.

Fig. 4-3



Dummy antenna

- The following table shows relations among FM SG attenuator indication (dB), available power ratio (dBf) and antenna terminal voltage (dB/μV) in each indication type.

	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	−0.8 dBf 65.2 dBf	-6 dB/μV 60 dB/μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/μV 60 dB/μV

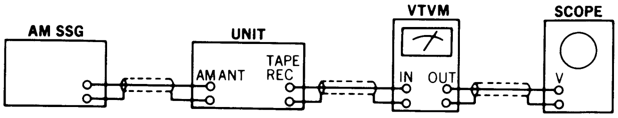
4-3. AM Adjustment

(See Figs. 4-4, 4-5, Parts Location F-3900 on page 9 and Top View on Page 11)

Note:
1. Input Selector . . . . AM
2. TUNING/FM MODE . . . . MANUAL/MONO
3. The frequency with "*" mark is for the unit that the AM 9/10 kHz channel step switch (oS18, Fig. 4-1) is set to 9 kHz and "**" mark is for the 10 kHz.
4. AM channel step frequency of the unit without the AM channel step switch (oS18) is fixed to 10 kHz, and it is applicable to the USA (UL) and Canada (CSA) under industrial standards.
5. Preset the listed frequencies to the memories.

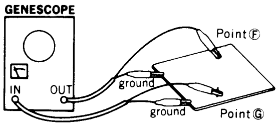
PRESET KEY	AM	
	*9 kHz STEP	**10kHz STEP
1	522kHz	530kHz
2	1611kHz	1620kHz
3	603kHz	600kHz
4	1404kHz	1400kHz

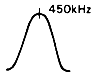
Fig. 4-4



(1) AM IF

Fig. 4-5



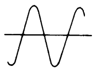
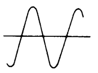
STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	Genescope Output 50dB	Point Ⓕ (eR1), F-3900	Between Point Ⓖ (eR11) and Earth F-3900	eCF1, (F-3900)	MAX. Waveform	

(2) AM Tuning Voltage

STEP	SUBJECT	SETTING	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	522kHz <**530kHz> Tuning Voltage	Depress PRESET Key 1 to readout 522kHz <**530kHz>	Between Ⓗ and Earth, F-3900, DC Volt Meter	eT2 (F-3900)	1V ±0.1V	• Repeat procedures as state in STEP 1 & 2.
2.	1611kHz <**1620kHz> Tuning Voltage	Depress PRESET Key 2 to readout 1611kHz <**1620kHz>	Same as above	eTC2 (F-3900)	9V ±0.1V	

(3) AM RF and Muting Level

Note:
1. Connect AM loop antenna to the AM antenna terminal and GND terminal.
2. Repeat procedures as stated in STEP 1 and 2.

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	*603kHz <**600kHz> RF Adj.	603kHz <**600kHz> ANT Input 50dB, 400Hz (30% MOD.), AM SSG	ANT terminal	REC OUT L-CH or R-CH, VTVM & SCOPE	eT3 (F-3900)	MAX. Output 	• Depress PRESET Key 3 to readout *603kHz <**600kHz>
2.	*1404kHz <**1400kHz> RF Adj.	1404kHz <**1400kHz> ANT Input 50dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC1 (F-3900)	MAX. Output 	• Depress PRESET Key 4 to readout *1404kHz <**1400kHz>
3.	Muting Level Adj.	999kHz <**1000kHz> ANT Input 55dB, 400Hz <30% MOD.), AM SSG	Same as above	Same as above	eVR1 (F-3900)	Output signal comes out.	• TUNING/FM MODE switch . . . AUTO

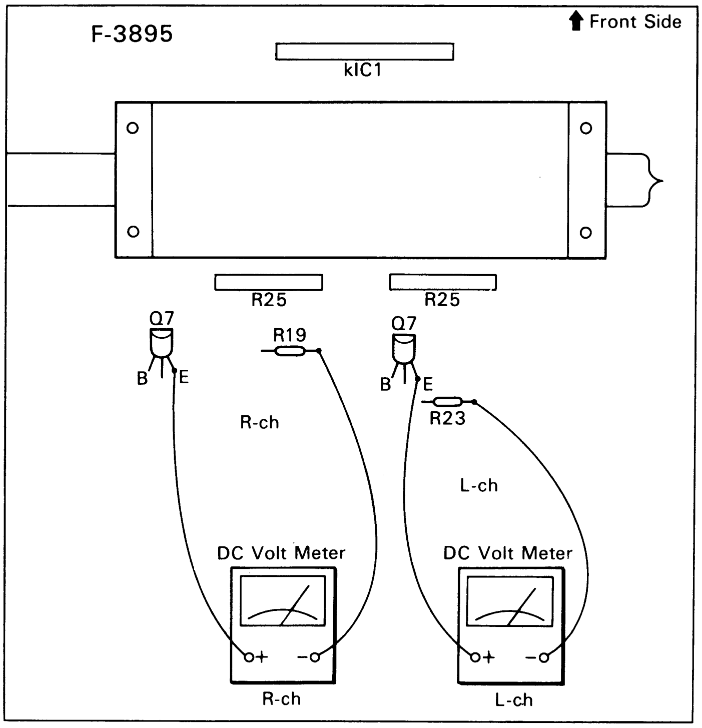
4-4. Driver Circuit Adjustment

(See Top View on Page 11)

Note: 1. Room Temperature .... 18°C ~ 28°C
2. VOLUME .... Minimum
3. Input Selector .... AUX.
4. For adjustment, run the unit for more than 3 minutes after the power is switched on.

STEP	SUBJECT	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	DC 0V Voltage Adj. L-CH	SPEAKERS Terminal L-ch, DC Volt Meter	kVR1L (F-3895)	DC 0V ±5 mV	• Z-5000 Only
2.	DC 0V Voltage Adj. R-CH	SPEAKERS Terminal, R-ch, DC Volt Meter	kVR1R (F-3895)	DC 0V ±5mV	• Z-5000 Only
3.	Bias Current Adj. L-CH	Between emitter terminals of kQ7L and R23L, F-3895, DC Volt Meter (See Fig. 4-6)	kVR2L (F-3895)	DC 3mV ±1mV	• Before turning ON power switch, turn kVR2L, R fully counter-clockwise. • This bias current value into voltage by ohms law.
4.	Bias Current Adj. R-CH	Between emitter terminals of kQ7R and R19R, F-3895, DC Volt Meter (See Fig. 4-6)	kVR2R (F-3895)		

Fig. 4-6



• Abbreviations

Equipment	
AM FM Generator Oscilloscope	Genescope
AM Standard Signal Generator	AM SSG
FM Standard Signal Generator	FM SSG
FM Stereo Generator	Stereo SG
Oscilloscope	Scope
Audio Oscillator	Audio Osc.
Distortion Meter	Dist. Meter

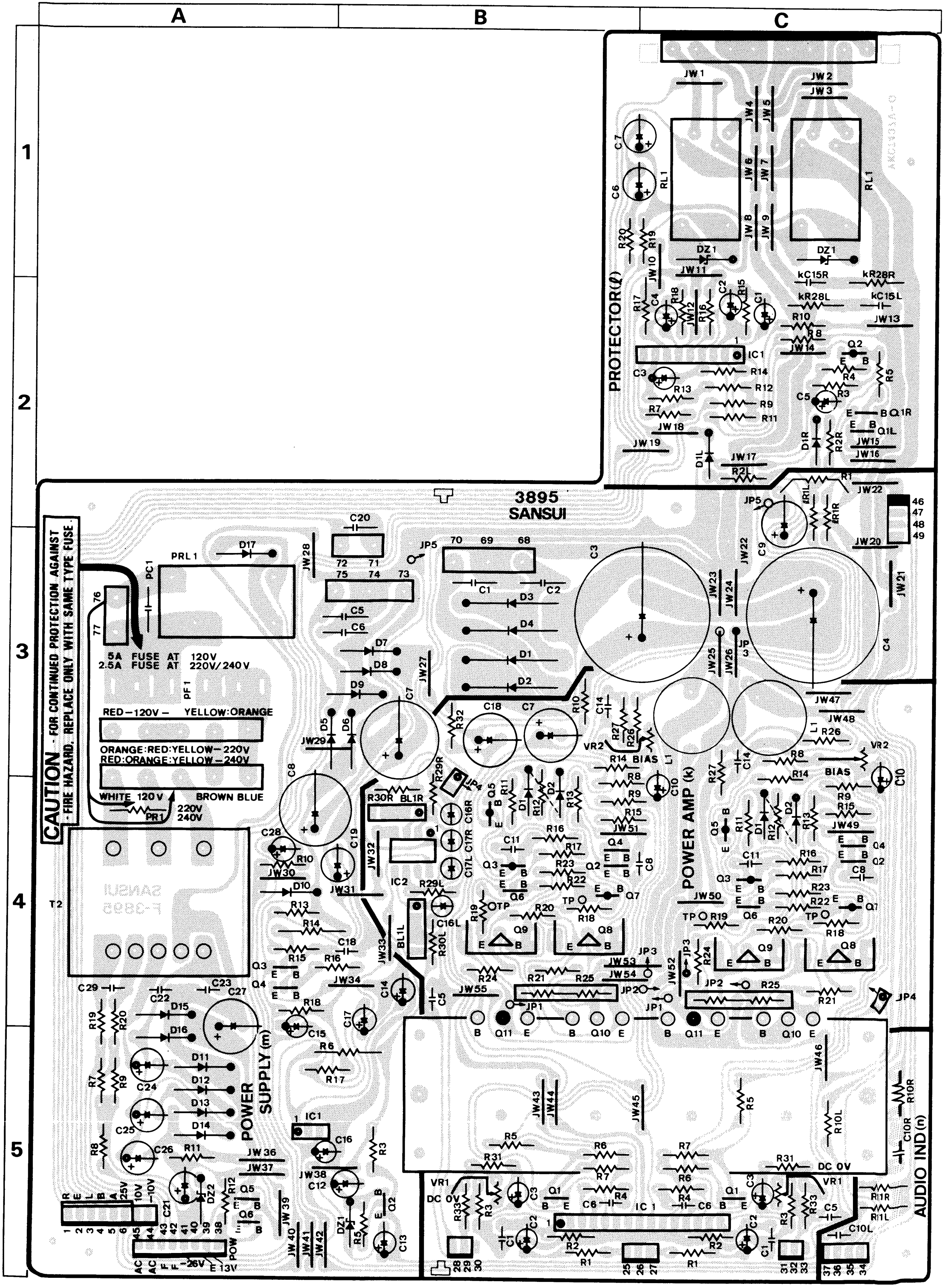
Others	
Antenna	ANT.
Modulation	MOD.
Total Harmonic Distortion	T.H.D.

5. PARTS LOCATION & PARTS LIST

•Since some of capacitors and resistors are omitted from parts lists in this Service Manual, refer to the Common Parts List for capacitors & resistors, which was appended previously to Sansui Manual.

5-1. F-3895 Power Amp. & Power Supply Circuit Board (Stock No. 00718501 = Z-5000/00717401 = Z-3000)

Component Side

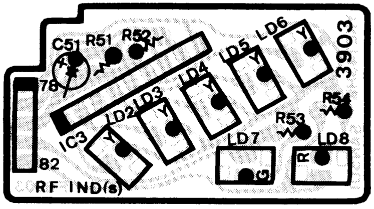

A
B
C
1
2
3
4
5
3895
SANSUI
PROTECTOR (ℓ)
POWER AMP (k)
POWER SUPPLY (m)
AUDIO IND (n)
CAUTION - FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE FUSE.
5A FUSE AT 120V
2.5A FUSE AT 220V/240V
PF1
PRL1
PC1
T2
RED—120V— YELLOW:ORANGE
ORANGE:RED:YELLOW—220V
RED:ORANGE:YELLOW—240V
WHITE 120V
BROWN BLUE
220V
240V
PR1
RL1
IC1
IC2
VR1
VR2
BIAS
DC 0V
TP
JP1
JP2
JP3
JP4
JP5
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
BL1R
BL1L
L1
25V
10V
-10V
-26V
13V
POW
AC

Parts List <F-3895>

Parts No.	Stock No.	Description
●Transistor		
kQ1	03067401	2SC1845
kQ2	03066801	2SC2071
kQ3	03010301	2SA939
kQ6	46127701	2SC2909
kQ7	46127601	2SA1207
kQ8	03069301	2SC2238
kQ9	03012401	2SA968
kQ10	03068101	2SC2581 <Z-5000>
kQ11	03011401	2SA1106
kQ10	07259101	2SC2579LB <Z-3000>
kQ11	07258901	2SA1104LB
●IC		
kIC1	46435600	STK3062-2
kIC2	03607700	NJM4558D <Z-3000>
●Diode		
kD1, 2	03117600	1S2473D <Z-5000>
●Resistor		
kR10, 32	46228600	47Ω 1/2W N.I.R.
kR14, 15	46228400	33Ω 1/2W N.I.R. <Z-5000>
kR20	46229100	120Ω 1/2W N.I.R.
kR21, 24	46227400	4.7Ω 1/2W N.I.R.
kR25	00091700	0.33Ω x 2 5W Ce.R.
kR28	46227400	4.7Ω 1/2W N.I.R.
kC16, 17	46445800	10μF 16V E.B. <Z-3000>
kBL1	46426800	Composition Parts
kL1	42903700	Inductor
	46027200	Inductor <Z-5000>
kVR1	07241400	20kΩ B S.V.R., DC 0V <Z-5000>
kVR2	07241000	1kΩ S.V.R., Bias
●Transistor		
lQ1	03066801	2SC2071
lQ2	03010901	2SA992
●IC		
lIC1	46207600	TA7317P
●Diode		
lD1	03117600	1S2473D
●Zener Diode		
lDZ1, 2	03180200	RD24E
lR19, 20	46229300	180Ω 1/2W N.I.R.
lRL1, 2	46254900	Relay, protector
●Transistor		
mQ2	03085201	2SD438
mQ3	03033101	2SB528
mQ4, 5	07194701	2SA1015
	or 07197001	2SA733A
	or 03012701	2SA999
mQ6	46188601	2SA1015
●IC		
mIC1	46361400	L78N10
●Diode		
mD1～4	03115300	30D-2
mD5～17	03117700	10E-2
●Zener Diode		
mDZ1	03178600	RD11E-B
mDZ2	03171900	RD27F B
●Resistor		
mR1	00195400	27Ω 3W N.I.R.
mR3	46229200	150Ω 1/2W N.I.R.
mR6, 14	46249500	150Ω 1/2W N.I.R.
mR11	46228600	47Ω 1/2W N.I.R.
mR13	46230200	1kΩ 1/2W N.I.R.
mR19, 20	46227900	12Ω 1/2W N.I.R.
●Capacitor		
mC1, 2	08680400	10000pF 500V C.C.
mC3, 4	08301800	6800μF 63V E.L. <Z-5000>
	08300300	6800μF 55V E.L. <Z-3000>
mC5, 6	08680400	10000pF 500V C.C.
mT2	15008511	Power Transformer
	46364100	8P Push Terminal, SPEAKERS
pC1	46425800	10000pF 400V C.C.
pF1	07188800	Fuse 3A (220 V) <Z-5000>
	07189200	Fuse 6A (120 V)
	07188700	Fuse 2.5A (220 V) <Z-3000>
	07189100	Fuse 5.0A (120 V)
pRL1	46275300	Relay

5-2. F-3903 Signal Indicator Circuit Board

Component Side



● Note:
This circuit board is not supplied as the assembled. However, individual parts on the circuit board are provided by order.

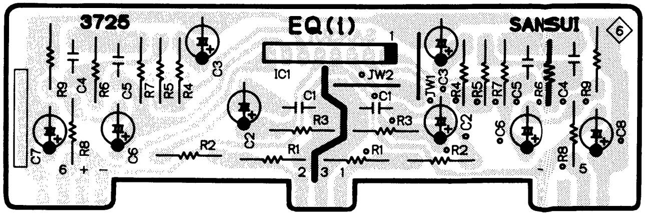
Parts List

Parts No.	Stock No.	Description
●IC		
sIC3	46392500	BA6125
●LED		
sLD2～6	07251000	TLY123, Signal
	or 46470400	SEL2910A
sLD7	07250900	TLG123, LOCKED
	or 46470300	SEL2410E
sLD8	46176900	TLS-123, STEREO
	or 46470200	SEL2210S
●Resistor		
sR51, 52, sR54	46330200	10kΩ 1/6W C.R.
●Capacitor		
sC51	46275600	10μF 16V E.C.

5-3. F-3725 EQ. Amp. Circuit Board

(Stock No. 00719901 = Z-5000/00695501 = Z-3000)

Component Side

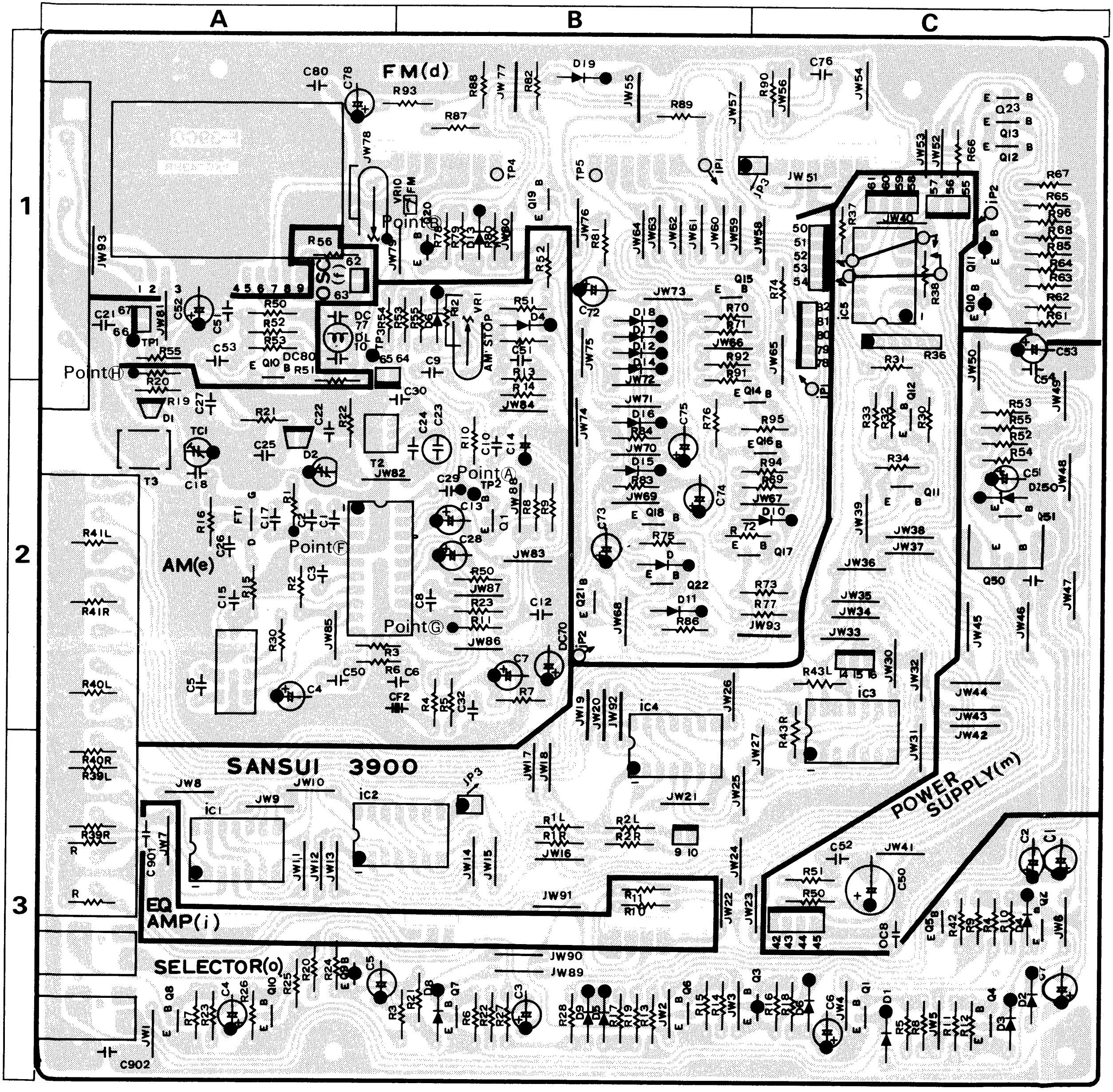


Parts List

Parts No.	Stock No.	Description
●IC		
iIC1	46288800	M5220L <Z-5000>
	46078900	M5218L <Z-3000>
●Capacitor		
iC1	46137200	220pF 50V C.C.

5-4. F-3900 FM, AM RF & COMPU Selector Circuit Board (Stock No. 00719001 = Z-5000/00717801 = Z-3000)

Component Side


A
B
C
1
2
3
FM(d)
AM(e)
SANSUI 3900
EQ AMP(i)
SELECTOR(o)
POWER SUPPLY(m)
Point Ⓐ
Point Ⓑ
Point Ⓕ
Point Ⓖ
Point Ⓗ
OSC(f)
AM STOP
ic1
ic2
ic3
ic4
ic5
C902

Parts List

Parts No.	Stock No.	Description
	46392600	FM Frontend Pack
●Transistor		
dQ10, 11	46367001	2SA1115
dQ12~19	46367101	2SC2603
dQ20	46367001	2SA1115
dQ21~23	46367101	2SC2603
●Diode		
dD10, 11	03117600	1S2473D
	or 46086000	1S1588
dD12	46501600	Composition Parts
dD13, 15	03117600	1S2473D
	or 46086000	1S1588
dD16, 19	03117600	1S2473D
	or 46086000	1S1588
dL10	46204100	2.2μH Inductor
dVR10	07241300	10kΩ (B) S.V.R., Muting Adj.
●Transistor		
eQ1	46367101	2SC2603

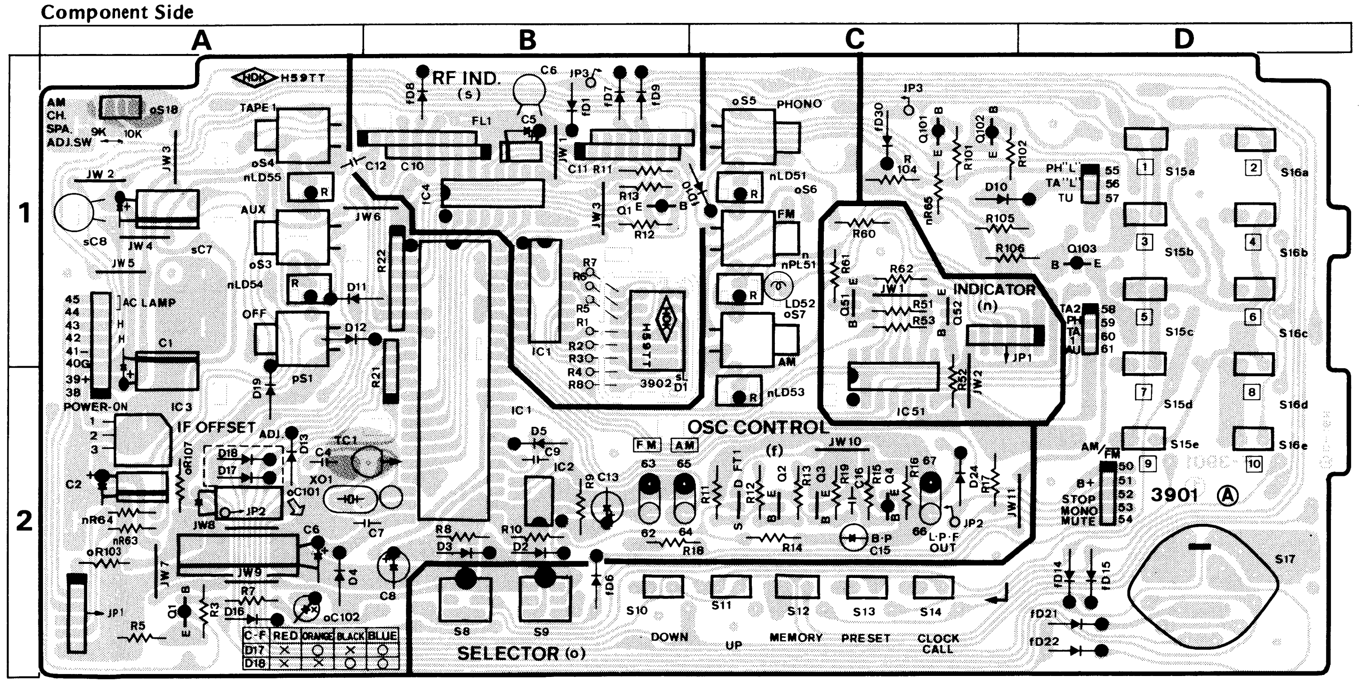
Parts No.	Stock No.	Description
●FET		
eFT1	46393000, 1	2SK192A-Y, GR
●IC		
eIC1	07237200	LA1245
●Diode		
eD1, 2	46254600	Varactor Diode 1SV100
dD3~5	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
eTC1, 2	46095600	20pF Trimmer Capacitor
eCF1	07254000	Ceramic Filter
eCF2	07265100	Ceramic Filter
eT2	46394700	AM RF Coil
eT3	46394600	AM ANT Coil
eVR1	07241500	50kΩ (B) S.V.R., AM stop level Adj.

Parts List <F-3900>

Parts No.	Stock No.	Description
●Transistor		
fQ10	46367101	2SC2603
mQ50	07287101	2SD1147
mQ51	46367101	2SC2603
●Zener Diode		
mDZ50	03177600	RD6.8E
mR50	46230800	3.3kΩ 1/2W N.I.R.
●Transistor		
oQ1, 2	46367101	2SC2603
oQ3	46367001	2SA1115
oQ4 ~ 8	46367101	2SC2603
oQ9, 11	46367001	2SA1115
oQ12	46367101	2SC2603
oQ19, 20	03068301	2SC2320
	or 07194801	2SC1815
●IC		
oIC1 ~ 4	46255000	LC4066BH
oIC5	07246300	MB4204M
●Diode		
oD1 ~ 6	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
oD8, 9	03117600	1S2473D
	or 46086000	1S1588
	or 46092700	US1035
oR48	46503400	Composition Parts
oJ3, 4	46411800	Jack, COMPU SELECTOR
	46363800	4P Input Terminal, TAPE-1, TAPE-2, AUX, PHONO

5-5. F-3901 Control & Indicator Circuit Board (Stock No. 00719101 = Z-5000/00717901 = Z-3000)

Component Side



Parts List

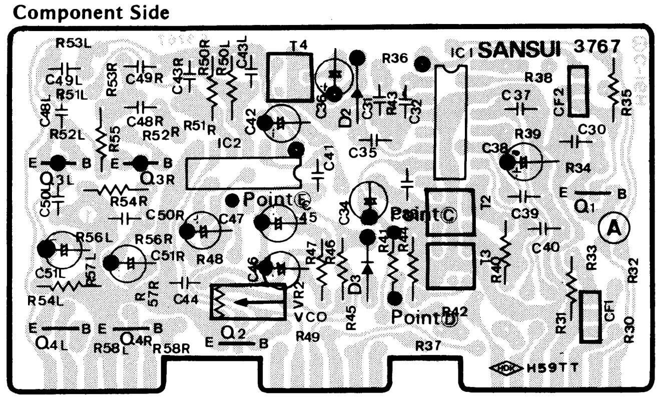
Parts No.	Stock No.	Description
●Transistor		
fQ1	46086601	2SA937
fQ2, 3	07194801	2SC1815
	or 03059501	2SC945
	or 03068301	2SC2320
fQ4	07197001	2SA733
	or 03012701	2SA999
●FET		
fFT1	03703401, 2	2SK163-K2, L1
●IC		
fIC1	46253300	μPD1704C-011
fIC2	46253400	μPB553AC
fIC3	46361200	L78N06
fXO1	46443900	Quartz Element (4.5MHz)
●Diode		
fD1 ~ 19	03111600	1S2473D
fD21, 22	03111600	1S2473D
fD24, 30	03111600	1S2473D
●Array Resistor		
fR21	46343100	Array Resistor, 100k-4P
fR22	46392900	Array Resistor, 100k-7P
●Capacitor		
fC1	46316400	100μF 16V E.L.
fC2	46275900	47μF 16V E.L.
fC8	46276800	4.7μF 50V E.L.
fC13	46275700	22μF 16V E.L.
fC15	00305800	2.2μF 25V E.B.
fTC1	46444600	30pF
●Transistor		
nQ51, 52	03069401	2SC2021
●IC		
nIC51	46397500	BA612
●LED		
nLD51 ~ 55	46176900	TLS-123
	or 46470200	SEL2210S
nPL51	46315900	Pilot Lamp 12V 0.15A

Parts List <F-3901>

Parts No.	Stock No.	Description
●Transistor		
oQ101 ~ Q103	46086601	2SA937
●Diode		
oD101	03111600	1S2473D
oC101	00305800	2.2μF 25V E.B.
oS3 ~ 7	46395900	Push SW., TAPE-1, AUX, PHONO, FM, AM
oS8, 9	46360000	Push SW., TAPE-2, FM MODE
oS10 ~ 16	46396700	Push SW., TUNING, MEMORY, SCAN, CLOCK CALL, PROGRAM
oS17	46396300	Rotary SW., PROGRAM TIMER
oS18	46394000	Slide SW., AM STEP
pS1	46395900	Push SW., POWER STD-BY
●Transistor		
sQ1	46086601	2SA937
●IC		
sIC1	46257100	M74LS247
	or 46257200	MB74LS247
sIC4	46253500	μPA80C
sFL1	46254000	Display Tube, FG78G1GR
●Resistor		
sR1 ~ 7	46328600	2.2kΩ 1/6W C.R.
sR8	46322300	4.7Ω 1/6W C.R.
●Capacitor		
sC5	46275900	47μF 16V E.L.
sC7	46422700	47μF 35V E.C.
sC10, 11	46263000	Array Capacitor, 330pF 50V

5-6. F-3767 FM IF Circuit Board (Stock No. 00722001)

Component Side

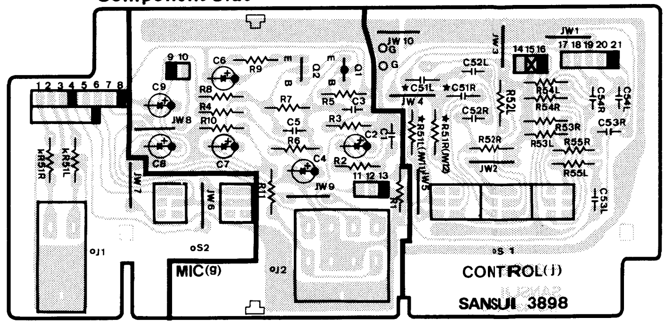


Parts List

Parts No.	Stock No.	Description
●Transistor		
dQ1	46393201	2SC2786
dQ2	46391901	2SC2785
dQ3	46392001	2SA1175
dQ4	46367101	2SC2603
	or 46391901	2SC2785
●IC		
dIC1	07191200	LA1231N
dIC2	03603000	HA1156W
●Diode		
dD2, 3	03117600	1S2473D
●Capacitor		
dC36	08451400	4.7μF 25V E.B.
dC42	08451200	2.2μF 25V E.B.
●Ceramic Filter		
dCF1, 2	07248700	SFE10.7MS1G
●Coil		
dT2	46369100	FM IF Coil
dT3	46369200	FM IF Coil
dT4	46202400	Filter
dVR2	07218000	6.8kΩ S.V.R., VCO Adj.

5-7. F-3898 Mic Amp. & Control Switch Circuit Board (Stock No. 00718801 = Z-5000/ 00717701 = Z-3000)

Component Side

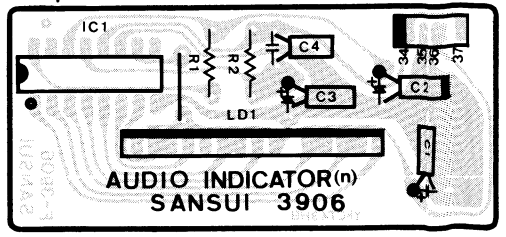


Parts List

Parts No.	Stock No.	Description
●Transistor		
gQ1	03010901	2SA992
gQ2	07225401	2SC2320L
kR51	46249700	220Ω 1W N.I.R.
oS1	46430500	Push SW., SUBSONIC FILTER, HIGH FILTER, LOUDNESS <Z-5000>
	46430700	Push SW., HIGH FILTER, LOUDNESS <Z-3000>
oS2	46430600	Push SW., SPEAKERS,
oJ1	46289200	Jack, PHONES
oJ2	46133900	Jack with SW., MIC <Z-5000>

5-8. F-3906 Peak Power Indicator Circuit Board <Z-3000>

Component Side



Parts List

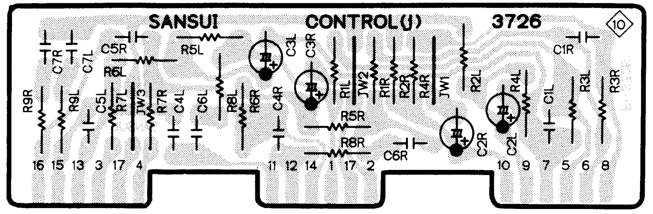
Parts No.	Stock No.	Description
●IC		
nIC1	46398400	IR2E29
nLD1	46398500	LED (GL107R), PEAK POWER Ind.

- Note: The F-3906 circuit board is not supplied as the assembled. However, individual parts on the circuit board are provided by order.

- The following circuit boards are not supplied as the assembled. However, the individual parts on the circuit boards are provided for orders.

5-9. F-3726 Tone Control Circuit Board

Component Side

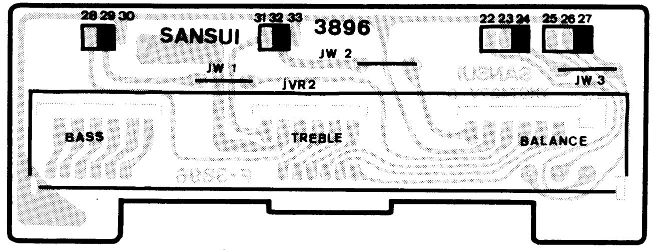

SANSUI
CONTROL(J)
3726
10
C7R
C7L
C5R
R5L
R6L
R9R
R9L
C5L
R7L
JW3
R7R
C4L
C6L
R8L
R6R
C4R
C3L
C3R
R5R
R8R
C6R
R1L
JW2
R1R
R2R
R4R
JW1
R2L
C2R
C2L
R4L
C1R
C1L
R3L
R3R
16 15 13 3 17 4
11 12 14 1 17 2
10 9 7 5 6 8

Parts List

Parts No.	Stock No.	Description
jC7	07216800	0.068μF 25V C.C.

5-10. F-3896 Tone & Balance VR Circuit Board

Component Side


28 29 30
SANSUI
31 32 33
3896
22 23 24
25 26 27
JW 1
JW 2
JW 3
jVR2
BASS
TREBLE
BALANCE

Parts List

Parts No.	Stock No.	Description
jVR2	46423900	50kΩ x 2 & 250kΩ VR.

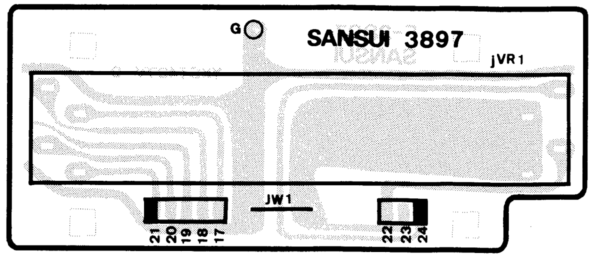
* **Concerning Printed Resistor and Printed Silver Pattern**

In this model, printed circuit board is used on which carbon resine resistance and silver foil pattern are coated. And it is impossible to replace those parts. Therefore, please keep following procedures when repairing or ordering the parts.

1. When repairing the printed resistor, cut off center portion of the resistor to make complete open circuit. Then solder 1/3 W type carbon resistor to conductor side of the PCB.
2. When repairing the printed silver pattern, solder lead wire to conductor side of the PCB.
3. When ordering the 1/3 W type carbon resistor, read the resistance value from the schematic diagram, and refer to "Common Parts List for Resistors and Capacitors".

5-11. F-3897 Volume Circuit Board

Component Side

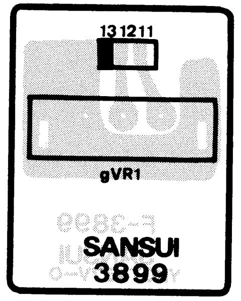

G
SANSUI 3897
jVR1
JW1
21 20 19 18 17
22 23 24

Parts List

Parts No.	Stock No.	Description
jVR1	46423800	150kΩ (B) x 2 Slide VR, VOLUME

5-12. F-3899 Mic VR Circuit Board

Component Side


13 12 11
gVR1
SANSUI
3899

Parts List

Parts No.	Stock No.	Description
gVR1	46424000	20kΩ VR

5-13. F-3902 Preset Station Circuit Board

Parts List

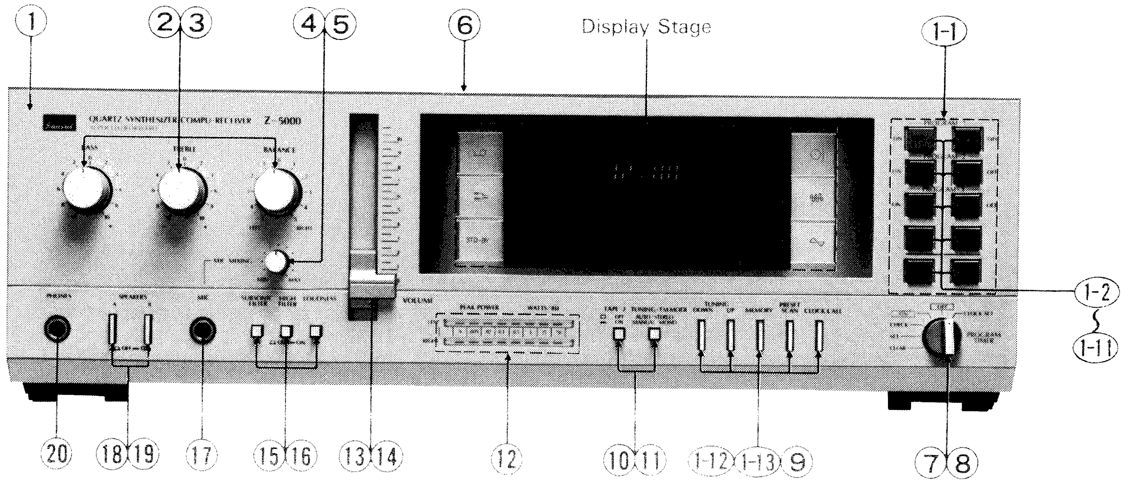
Parts No.	Stock No.	Description
sLD1	46427300	LED, PRESET STATION

● Abbreviations

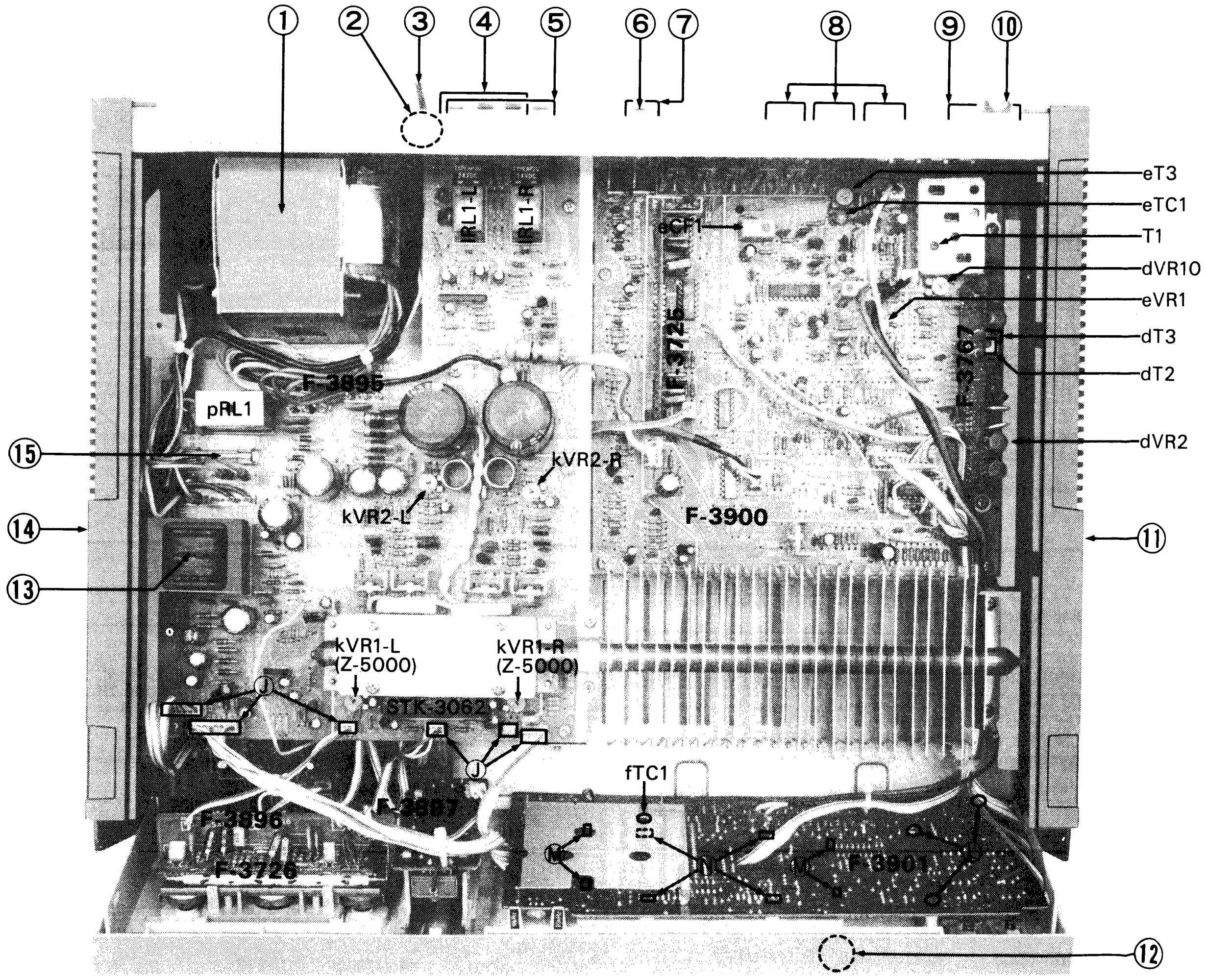
C.R. : Carbon Resistor
S.R. : Solid Resistor
Ce.R. : Cement Resistor
M.R. : Metal Film Resistor
F.R. : Fusing Resistor
N.I.R. : Non-Inflammable Resistor
C.C. : Ceramic Capacitor
C.T. : Ceramic Capacitor, Temperature Compensation
E.C. : Electrolytic Capacitor
E.L. : Low Leak Electrolytic Capacitor
E.B. : Bi-Polar Electrolytic Capacitor
E.BL. : Low Leak Bi-Polar Electrolytic Capacitor
Ta.C. : Tantalum Capacitor
F.C. : Film Capacitor
M.P. : Metalized Paper Capacitor
P.C. : Polystyrene Capacitor
G.C. : Gimmic Capacitor
V.R. : Variable Resistor
S.V.R. : Semi Variable Resistor
SW. : Switch

6. OTHER PARTS

6-1. Front View


①
②③
④⑤
⑥
Display Stage
(1-1)
(1-2)
(1-11)
⑳
⑱⑲
⑰
⑮⑯
⑬⑭
⑫
⑩⑪
(1-12)(1-13)⑨
⑦⑧
QUARTZ SYNTHESIZER COMPU-RECEIVER Z-5000
BASS
TREBLE
BALANCE
VOLUME

6-2. Top View


①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮
eT3
eTC1
T1
dVR10
eVR1
dT3
dT2
dVR2
eCF1
RL1-L
RL1-R
F-3726
F-3767
F-3895
pRL1
kVR2-R
kVR2-L
F-3900
kVR1-L
(Z-5000)
kVR1-R
(Z-5000)
STK-3062
J
J
fTC1
M
N
M
F-3896
F-3897
F-3726
F-3901

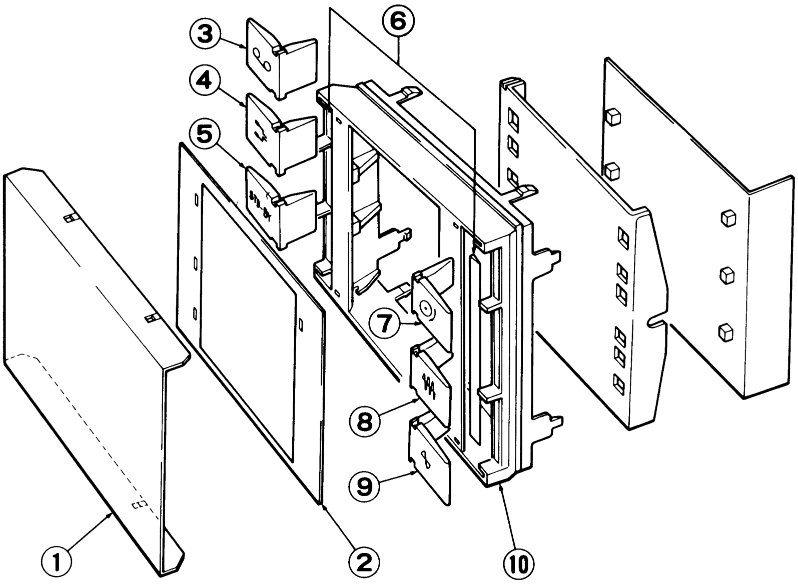
Parts List <Front View>

Parts No.	Stock No.	Description
1	47036500	Front Panel Ass'y (Z-5000)
	47036600	Front Panel Ass'y (Z-3000)
1-1	07988500	10 Key-Guide
1-2	07987300	Push Knob (1), PROGRAM
1-3	07987400	Push Knob (2), PROGRAM
1-4	07987500	Push Knob (3), PROGRAM
1-5	07987600	Push Knob (4), PROGRAM
1-6	07987700	Push Knob (5), PROGRAM
1-7	07987800	Push Knob (6), PROGRAM
1-8	07987900	Push Knob (7), PROGRAM
1-9	07988000	Push Knob (8), PROGRAM
1-10	07988100	Push Knob (9), PROGRAM
1-11	07988200	Push Knob (0), PROGRAM
1-12	47010800	Push Knob, TUNING, MEMORY, SCAN, CLOCK CALL
1-13	47021400	Push Knob Guide, TUNING, MEMORY, SCAN, CLOCK CALL
2	07932400	Knob, BASS, TREBLE, BALANCE
3	46423900	50kΩ x 2 & 250kΩ VR, BASS, TREBLE, BALANCE
4	47035700	Knob, MIC MIXING (Z-5000)
5	46424000	20kΩ VR, MIC MIXING (Z-5000)
6	47036700	Bonnet
7	47035600	Knob, PROGRAM TIMER
8	46396300	Rotary SW., PROGRAM TIMER
9	46396700	Push SW., TUNING, MEMORY, SCAN, CLOCK CALL
10	47010600	Push Knob, TAPE-2 TUNING/ FM MODE
11	46360000	Push SW., TAPE-2 TUNING/ FM MODE
12	46398600	LT1079, PEAK POWER Indicator (Z-5000)
13	47011100	Knob, VOLUME
14	46423800	150kΩ (B) x 2 Slide VR., VOLUME
15	47035500	Push Knob, HIGH FILTER, LOUDNESS, SUBSONIC FILTER
16	46430500	Push SW., HIGH FILTER, LOUDNESS, SUBSONIC FILTER (Z-5000)
	46430700	Push SW., HIGH FILTER, LOUDNESS, (Z-3000)
17	46133900	Jack, MIC (Z-5000)
18	47010700	Knob, SPEAKERS
19	46430600	Push SW., SPEAKERS
20	46289200	Jack, PHONES

Parts List <Top View>

Parts No.	Stock No.	Description
1	15009801	Power Transformer (Z-5000)
	15009901	Power Transformer (Z-3000)
2	39106000	Strain Relief
3	38005700	Power Supply Cord
4	46368600	AC OUTLET
5	46364100	8P Push Terminal, SPEAKERS
6	22301500	Gnd Terminal
7	46411800	Jack, COMPU-SELECTOR
8	46363800	4P Terminal, TAPE-1, TAPE-2, AUX, PHONO
9	46364200	4P Antenna Terminal
10	07193200	Lod Holder
11	47036400	Side Panel (R)
12	46315900	Pilot Lamp, 12V 0.15A
13	15008511	Power Transformer
14	47036300	Side Panel (L)
15	07188800	Fuse 3A (220 V) } <Z-5000>
	07189200	Fuse 6A (120 V)
	07188700	Fuse 2.5A (220 V) } <Z-3000>
	07189100	Fuse 5A (120 V)

6-3. Display Stage



Parts List <Display Stage>

Parts No.	Stock No.	Description
1	47034800	Display Cover
2	47034700	Display Panel
3	07925000	Knob, TAPE-1
4	07969900	Knob, AUX
5	07970000	Knob, POWER STD-BY
6	47071300	Cushion Rubber
7	07924400	Knob, PHONO
8	07924300	Knob, FM
9	07924200	Knob, AM
10	47011720	Display Holder
	46395900	Push SW., TAPE-1, AUX, POWER, PHONO, FM, AM

7. MAIN PARTS REPLACEMENT

A. Side Panel L (R)

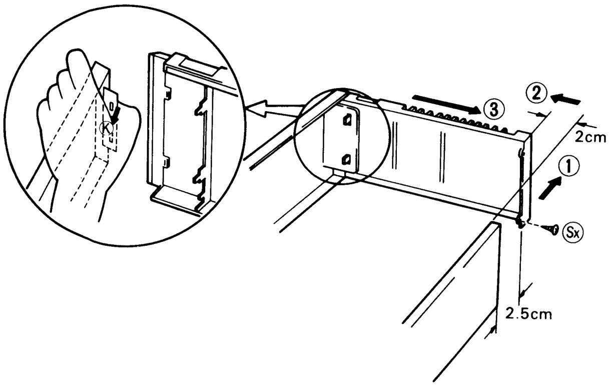
(See Fig. 7-1 and Top View on page 11)

1) Remove the bonnet.
2) Loosen two (Sx) screws fixing side panel L and R from rear panel side.
3) Pull out six Ⓙ connectors on F-3895 circuit board.
4) Position the unit with left side upward.

Note: Do not spoil the side panel.

5) Shift the position of the side panel L 2.5 cm in the arrow direction ① and shift it 2 cm in the arrow direction ②.
6) Grasp the front panel by left hand and pull Ⓚ portion by left thumb, then pull it the arrow direction ③ to remove side panel L.
7) Remove the side panel R in the same knack.

Fig. 7-1



B. Display Stage

(See Top View on page 11)

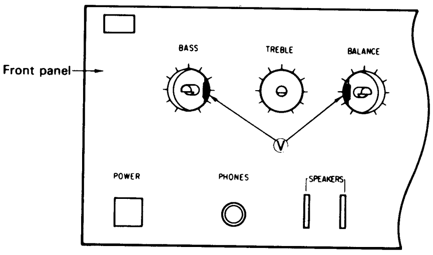
1) Remove the side panel L and side panel R.
2) Loosen the Ⓛ screws fixing, F-3901 circuit board.
3) Unhook four Ⓜ nails to remove F-3901 circuit board.
4) Unhook four Ⓝ nails to remove display stage.

C. Front Panel Ass'y

(See Figs. 7-2, 7-3 and Top View on page 11)

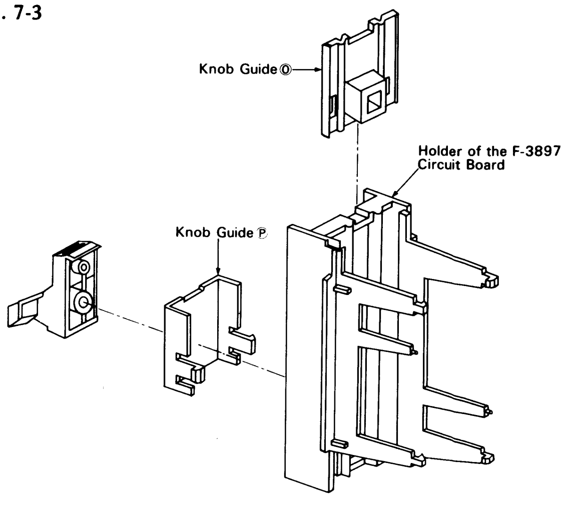
1) Remove the display stage.
2) Unhook four nails to remove the F-3897 circuit board with variable resistor.
3) Remove the F-3898 circuit board with phones jack and speaker switches.
4) Pluck out knobs (BASS, TREBLE, BALANCE)

Fig. 7-2



5) Unhook two Ⓥ nails from front panel to remove the F-3896 circuit board.
6) Pluck out the mic level knob.
7) Remove the F-3899 circuit board with mic volume.

Fig. 7-3



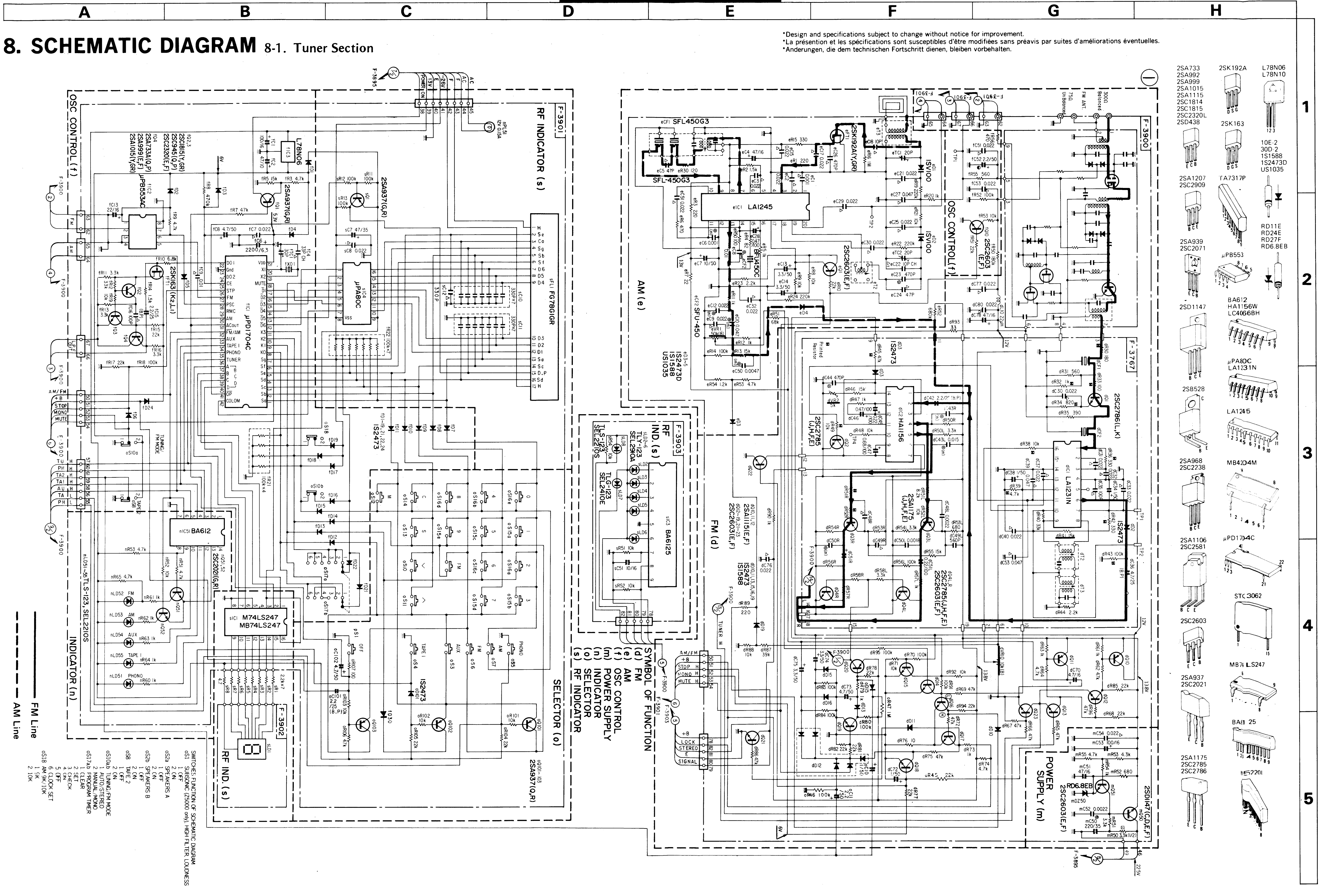
8) Unhook two nails to remove Ⓞ knob guide.
9) Unhook two nails to remove holder of the F-3897 circuit board.
10) Remove Ⓟ knob guide.

D. Program Knob

1) Remove front panel Ass'y.
2) Cut off the 10-key guide with program knobs from front panel by wire cutter.
3) Past new program knobs inside a little. (To settle program knobs and 10key guide, fix them by adhesive for plastic).
4) Insert program knobs into pins of new 10-key guide.
5) Settle the 10-key guide with program knobs by adhesive for plastic.

8. SCHEMATIC DIAGRAM 8-1. Tuner Section

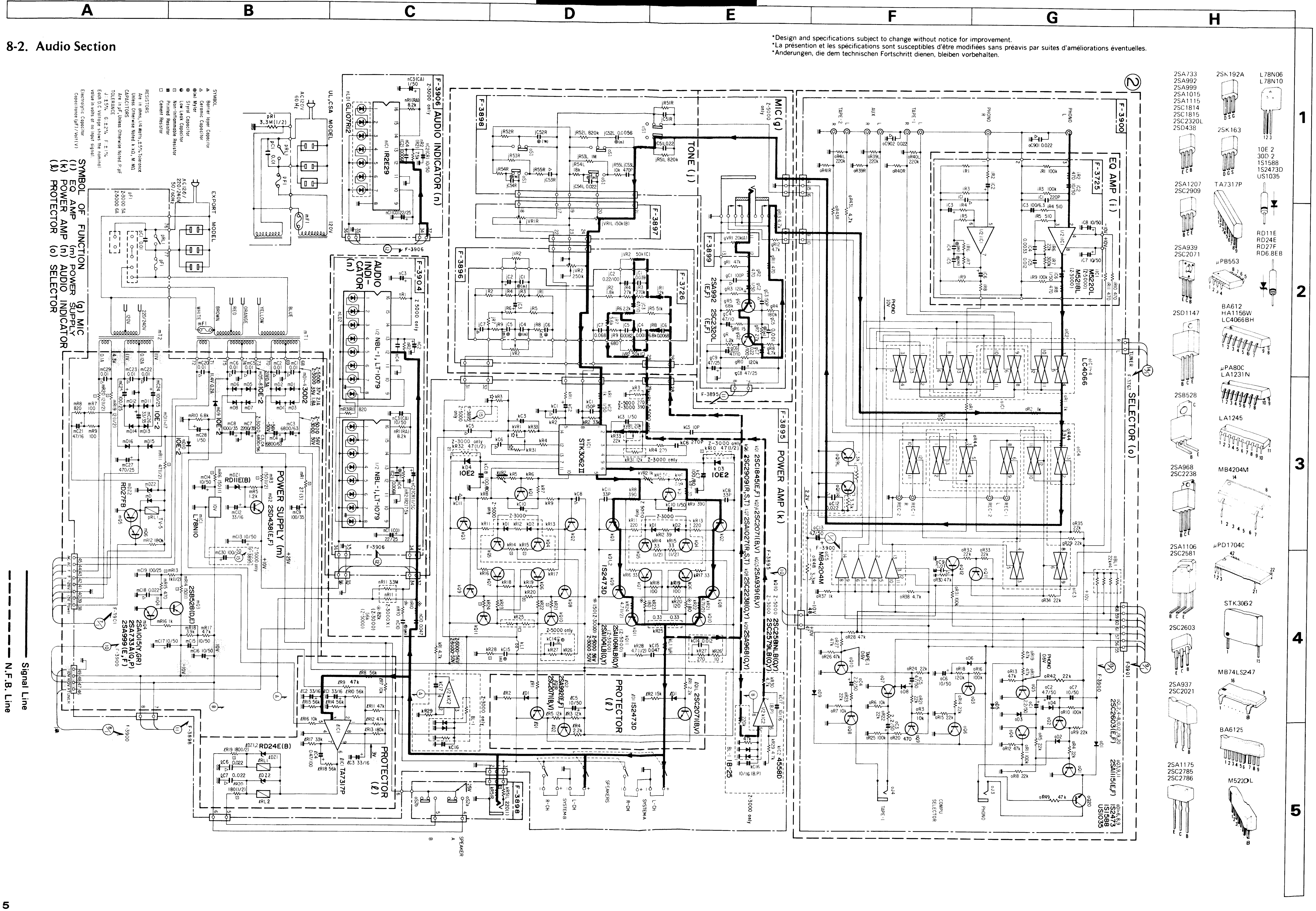
*Design and specifications subject to change without notice for improvement.
*La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
*Anderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.


A
B
C
D
E
F
G
H
1
2
3
4
5
OSC CONTROL (f)
RF INDICATOR (s)
F-3901
F-3900
F-3902
F-3903
F-3767
F-3895
AM (e)
FM (d)
OSC CONTROL (f)
SELECTOR (o)
INDICATOR (n)
RF IND. (s)
POWER SUPPLY (m)
LA1245
LA1231N
HA1156
μPD1704C
μPA80C
μPB553AC
BA612
BA6125
M74LS247
MB74LS247
L78N06
SFL450G3
SFL-450G3
SFU-450
FG7861GR
2SK192A(Y,GR)
2SC2786(L,K)
2SA937(Q,R)
2SD1147(C,D,E,F)
1S2473
FM Line
AM Line
SYMBOL OF FUNCTION
(d) FM
(e) AM
(f) OSC CONTROL
(m) POWER SUPPLY
(n) INDICATOR
(o) SELECTOR
(s) RF INDICATOR
2SA733
2SA992
2SA999
2SA1015
2SA1115
2SC1814
2SC1815
2SC2320L
2SD438
2SK192A
2SK163
L78N06
L78N10
10E-2
30D-2
1S1588
1S2473D
US1035
2SA1207
2SC2909
TA7317P
RD11E
RD24E
RD27F
RD6.8EB
2SA939
2SC2071
μPB553
2SD1147
BA612
HA1156W
LC4066BH
μPA80C
LA1231N
2SB528
LA1245
2SA968
2SC2238
MB8404M
2SA1106
2SC2581
μPD1704C
STC3062
2SC2603
MB74LS247
2SA937
2SC2021
BA6125
2SA1175
2SC2785
2SC2786
TC5220I

SWITCHES FUNCTION OF SCHEMATIC DIAGRAM
oS1 SUBSONIC (Z5000 only), HIGH FILTER, LOUDNESS
1. OFF
2. ON
oS2a SPEAKERS A
1. OFF
2. ON
oS2b SPEAKERS B
1. OFF
2. ON
oS8 TAPE 2
1. OFF
2. ON
oS10a,b TUNING/FM MODE
1. AUTO/STEREO
2. MANUAL/MONO
oS17a,b PROGRAM TIMER
1. CLEAR
2. SET
3. CHECK
4. ON
5. OFF
6. CLOCK SET
oS18 AM 9K/10K
1. 9K
2. 10K

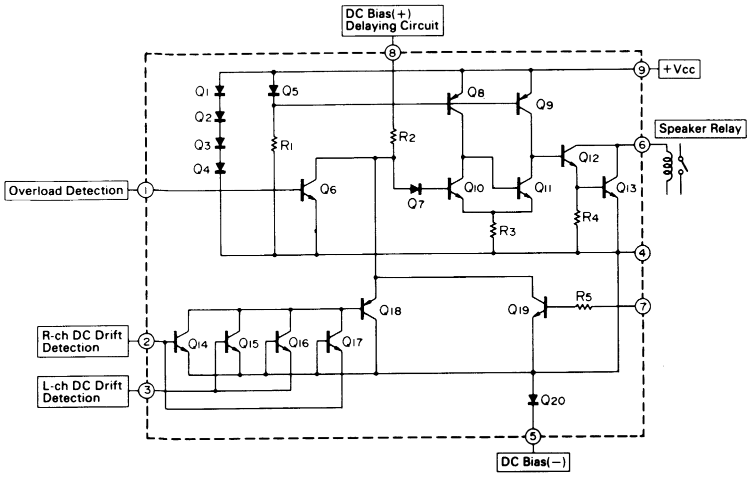
8-2. Audio Section

*Design and specifications subject to change without notice for improvement.
*La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
*Anderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

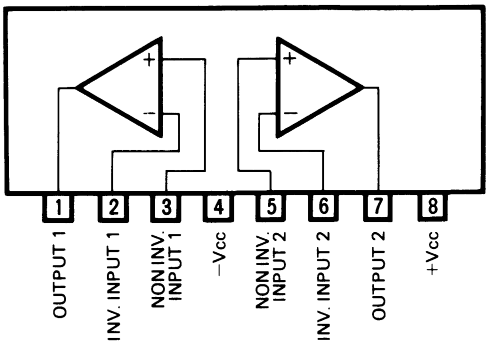

A
B
C
D
E
F
G
H
1
2
3
4
5
SYMBOL OF FUNCTION
(i) EQ AMP
(j) TONE
(k) POWER AMP
(ℓ) PROTECTOR
(m) POWER SUPPLY
(n) AUDIO INDICATOR
(o) SELECTOR
(g) MIC
F-3906 AUDIO INDICATOR (n)
F-3904 AUDIO INDICATOR (n)
F-3898
F-3897
F-3896
F-3726
F-3899
F-3895 POWER AMP (k)
F-3900
F-3725 EQ AMP (i)
SELECTOR (o)
TONE (j)
MIC (g)
POWER SUPPLY (m)
PROTECTOR (ℓ)
STK3062 II
UL,CSA MODEL
EXPORT MODEL
SPEAKER
Signal Line
N.F.B. Line
2SA733
2SA992
2SA999
2SA1015
2SA1115
2SC1814
2SC1815
2SC2320L
2SD438
2SK192A
2SK163
L78N06
L78N10
10E 2
30D 2
1S1588
1S2473D
US1035
2SA1207
2SC2909
TA7317P
RD11E
RD24E
RD27F
RD6.8EB
2SA939
2SC2071
μPB553
2SD1147
BA612
HA1156W
LC4066BH
2SB528
μPA80C
LA1231N
LA1245
2SA968
2SC2238
MB4204M
2SA1106
2SC2581
μPD1704C
STK3062
2SC2603
MB74LS247
2SA937
2SC2021
BA6125
2SA1175
2SC2785
2SC2786
M5220L

9. INTERIOR BLOCK DIAGRAM OF IC

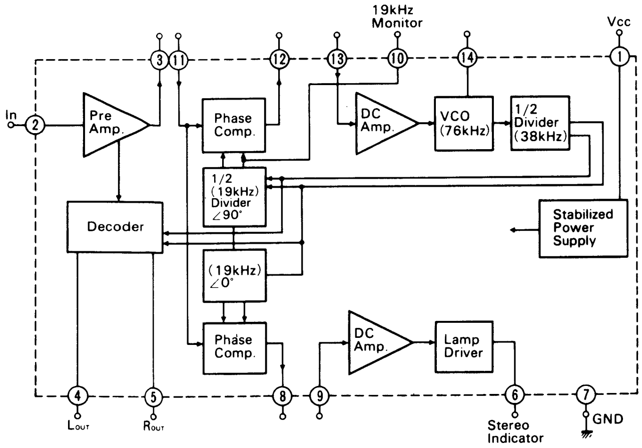
• TA7317P (Speaker Protector IC)


DC Bias(+)
Delaying Circuit
+Vcc
Speaker Relay
Overload Detection
R-ch DC Drift Detection
L-ch DC Drift Detection
DC Bias(−)
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
R1
R2
R3
R4
R5
1
2
3
4
5
6
7
8
9

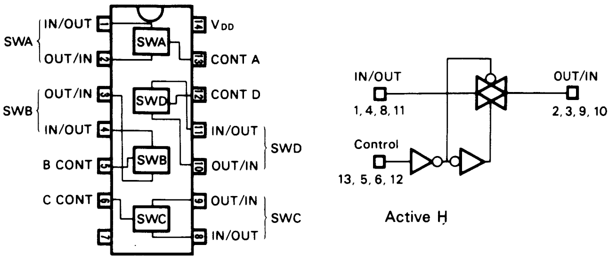
• M5220L, M5218L (Audio Pre Amp. IC)


+
−
1
2
3
4
5
6
7
8
OUTPUT 1
INV. INPUT 1
NON INV. INPUT 1
−Vcc
NON INV. INPUT 2
INV. INPUT 2
OUTPUT 2
+Vcc

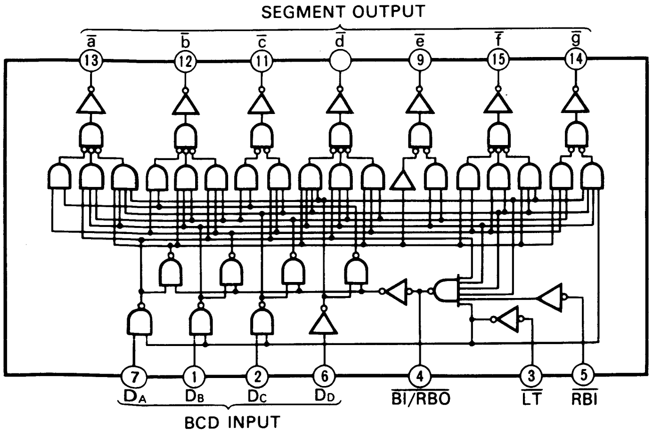
• HA1156 (MPX IC)


19kHz Monitor
Vcc
In
Pre Amp.
Phase Comp.
DC Amp.
VCO (76kHz)
1/2 Divider (38kHz)
1/2 (19kHz) Divider ∠90°
Decoder
Stabilized Power Supply
(19kHz) ∠0°
Phase Comp.
DC Amp.
Lamp Driver
L OUT
R OUT
Stereo Indicator
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14

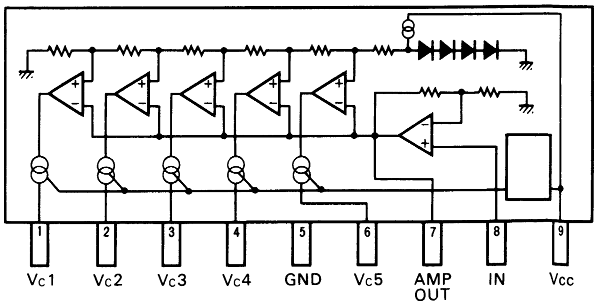
• LC4066BH (Quard Bilateral Switch IC)


SWA
IN/OUT
OUT/IN
SWB
OUT/IN
IN/OUT
B CONT
C CONT
VDD
CONT A
CONT D
IN/OUT
OUT/IN
SWD
OUT/IN
IN/OUT
SWC
SWA
SWD
SWB
SWC
IN/OUT
1, 4, 8, 11
OUT/IN
2, 3, 9, 10
Control
13, 5, 6, 12
Active H

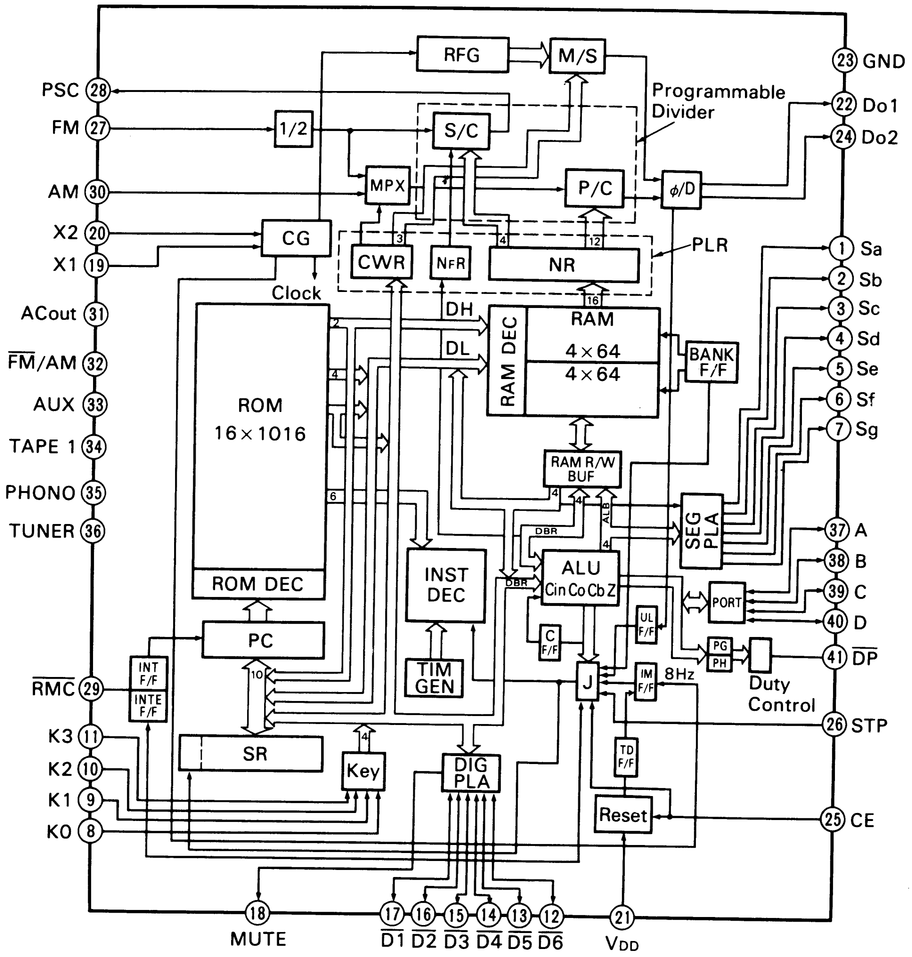
• M74LS247/MB74LS247 (BCD-TO-SEVEN-SEGMENT DECODER DRIVE IC)


SEGMENT OUTPUT
a
b
c
d
e
f
g
13
12
11
9
15
14
7
1
2
6
4
3
5
DA
DB
DC
DD
BI/RBO
LT
RBI
BCD INPUT

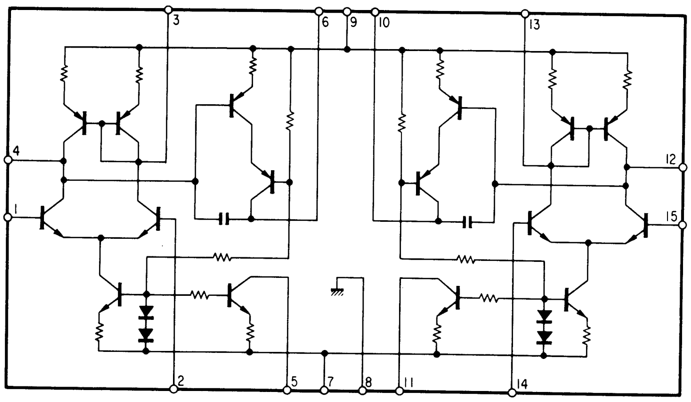
• BA6125 (L.E.D. Drive IC)


1
2
3
4
5
6
7
8
9
Vc1
Vc2
Vc3
Vc4
GND
Vc5
AMP OUT
IN
Vcc

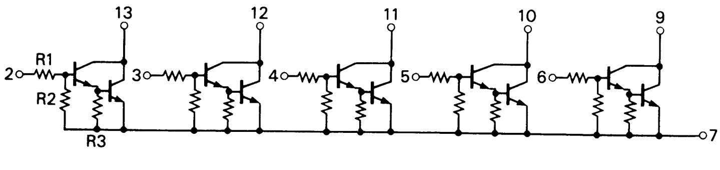
• μPD1704C-011 (FM/AM PLL Synthesizer & Control IC)


RFG
M/S
23 GND
PSC 28
Programmable Divider
22 Do1
FM 27
1/2
S/C
24 Do2
AM 30
MPX
P/C
φ/D
X2 20
CG
PLR
X1 19
CWR
NFR
NR
1 Sa
Clock
2 Sb
ACout 31
DH
RAM 4×64
3 Sc
DL
RAM DEC
4 Sd
FM/AM 32
4×64
BANK F/F
5 Se
AUX 33
ROM 16×1016
6 Sf
TAPE 1 34
7 Sg
PHONO 35
RAM R/W BUF
TUNER 36
DBR
ALB
SEG PLA
37 A
ALU Cin Co Cb Z
38 B
ROM DEC
INST DEC
PORT
39 C
PC
C F/F
UL F/F
40 D
PG PH
41 DP
TIM GEN
J
IM F/F
8Hz
Duty Control
RMC 29
INT F/F
INTE F/F
26 STP
K3 11
SR
TD F/F
K2 10
Key
DIG PLA
K1 9
Reset
25 CE
K0 8
18 MUTE
17 D1
16 D2
15 D3
14 D4
13 D5
12 D6
21 VDD

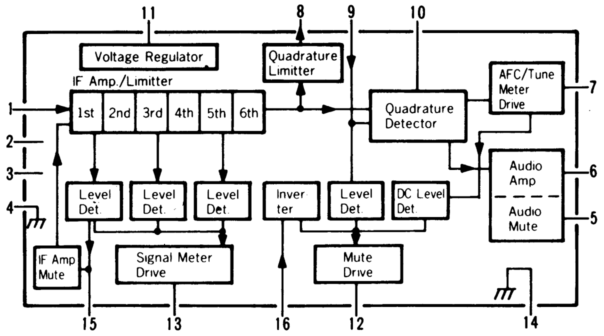
• STK3062 (Differential Amp. IC)


3
6
9
10
13
4
12
1
15
2
5
7
8
11
14

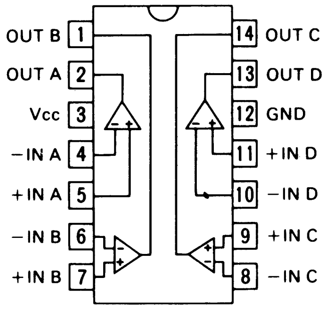
• BA-612 (L.E.D. Drive IC)


13
12
11
10
9
R1
2
3
4
5
6
R2
R3
7

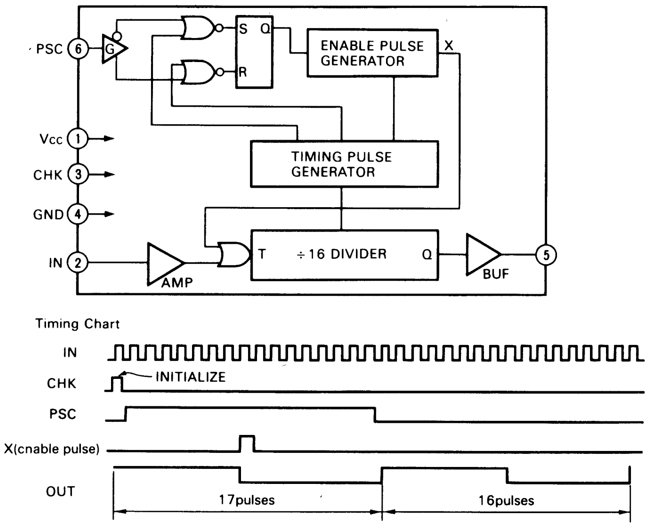
• LA1231N (IF & Quadrature Detector IC)


11
8
9
10
Voltage Regulator
Quadrature Limitter
IF Amp./Limitter
1st
2nd
3rd
4th
5th
6th
AFC/Tune Meter Drive
Quadrature Detector
Audio Amp
Audio Mute
Level Det.
Level Det.
Level Det.
Inver ter
Level Det.
DC Level Det.
IF Amp Mute
Signal Meter Drive
Mute Drive
1
2
3
4
7
6
5
15
13
16
12
14

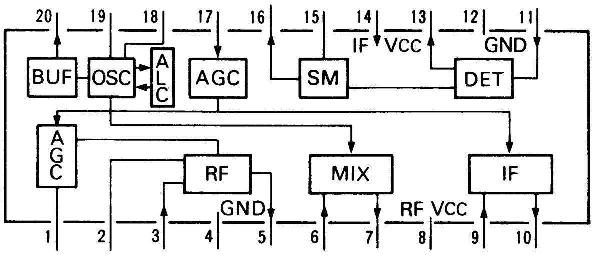
• MB4204M (Operational Amp. IC)


OUT B 1
OUT A 2
Vcc 3
−IN A 4
+IN A 5
−IN B 6
+IN B 7
14 OUT C
13 OUT D
12 GND
11 +IN D
10 −IN D
9 +IN C
8 −IN C

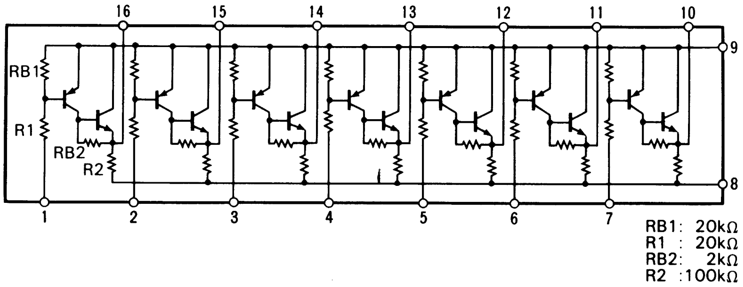
• μPB553AC (Prescaler IC)


PSC 6
G
S
Q
R
ENABLE PULSE GENERATOR
X
Vcc 1
CHK 3
GND 4
TIMING PULSE GENERATOR
IN 2
AMP
T
÷16 DIVIDER
Q
BUF
5
Timing Chart
IN
CHK
INITIALIZE
PSC
X(cnable pulse)
OUT
17pulses
16pulses

• LA1245 (AM Tuner IC)


20
19
18
17
16
15
14
13
12
11
IF VCC
GND
BUF
OSC
ALC
AGC
SM
DET
AGC
RF
MIX
IF
GND
RF VCC
1
2
3
4
5
6
7
8
9
10

• μPA80C (FL Display Tube Drive IC)


16
15
14
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12
11
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RB1
R1
RB2
R2
1
2
3
4
5
6
7
RB1: 20kΩ
R1 : 20kΩ
RB2: 2kΩ
R2 :100kΩ

10. NOTES

10-1. Notice when the user moves from 9 kHz to 10 kHz step area, or vice versa, in AM broadcasting frequency

- AM programs are being broadcast under channel plans which, depending on the broadcasting area in the world, are characterized by different channels (frequency intervals) between broadcasting stations. In North, South, and Central America, this channel is 10 kHz whereas in the rest of these areas, it is 9 kHz.
  This unit is a synthesizer tuner which varies the reception frequency at each 9 kHz or 10 kHz channel (frequency interval) during auto search reception. If the client uses the unit in an area with a different channel plan, he may not be able to receive AM stations. The unit he has purchased has been originally adjusted to the channel in his area. It is therefore necessary to change over the channel setting if he moves to an area with a different channel plan.
  It is impossible to receive AM broadcasting in Automatic Tuning operation. In this case, use the AM 9/10 kHz channel step switch (oS18, see Fig. 4-1 on page 3) installed on the circuit board F-3901.

10-2. Notice when the user moves from 100 kHz to 50 kHz step area, or vice versa, in FM broadcasting frequency.

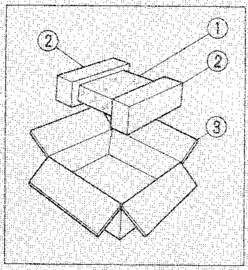
- When the frequency-step of AM broadcasting is set to 10 kHz or 9 kHz (in EUROPE) by sliding the AM 9/10 kHz channel step switch (oS18) installed on the circuit board F-3901, the frequency-step of FM broadcasting is also switched automatically to 200 kHz or 50 kHz (in EUROPE).

Switch (oS18)	AM	FM
Set 10 kHz	10 kHz Frequency Step	200 kHz Frequency Step
Set 9 kHz	9 kHz Frequency Step	50 kHz Frequency Step

- Disconnect the AC power plug from the AC outlet, when AM 9/10 kHz channel step switch (oS18) is set to 9 kHz or 10 kHz.

11. PACKING LIST

Parts No.	Stock No.	Description
1	91167820	Vinyl Bag
2	47036800	Styrofoam Packing
3	47036900	Carton Case (Z-5000)
	47037000	Carton Case (Z-3000)



12. ACCESSORY LIST

Stock No.	Description
07563000	Antenna Holder
46051700	FM Antenna
46145700	AM Loop Antenna
46256900	Operating Instruction (Z-5000)
46257000	Operating Instruction (Z-3000)
46425700	Operating Sheet

Sansui

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